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Shadows and Straws

SOMEWHERE about eight years ago, Mr. G. Alexander Wright, a member of the Institute in the San Francisco Chapter, besought the interest of the JOURNAL in the subject of Quantity Surveying. He was a pioneer in an unreceptive land. And now that he is no more and, like many another, did not live to see his long devotion bear any great fruit, let it not be forgotten that he was a pioneer and that because of the interview in question the subject of Quantity Surveying was never lost to sight again, so far as the Institute was concerned. We are proud of our share in the document which has been sponsored by the Institute, the Engineering Council, and the Associated General Contractors of America. It recommends the Quantity Survey to every owner, and very properly reminds him that he should not "pay a Contractor an overhead charge which includes any other costs than belong to his own project," and likewise that an Owner should pay for the preparation of an itemized list of quantities whether he proceeds with the contemplated project or not. Assuredly he should, and assuredly some owner does pay for them several times over, under the present system. The only man who gets anything free is the man who never builds, because all the expenses of nursing him through the preliminary approaches are saddled upon someone else. The overhead borne by the Building Industry, because of the supposed free service rendered, is no small item. Any man proposing to spend a considerable sum of money in building should insist on a Quantity Survey, as one of the most certain means of economy that he can employ.

PROFESSOR REILLY, of the Department of Architecture in Liverpool University, says things about Fifth Avenue, in the Liverpool *Daily Post and Mercury*, which are as picturesquely phrased as they are cleverly analytical.

"Fifth Avenue," he says, "is the most exciting street in the most exciting city in the world. I think if one imagines a deep, dark, strongly-flowing river, gliding swiftly and silently between great white cliffs of varying height, one will come near to it. The surface of the water is black with occasional spots of green. The black is due to endless streams of sleek, satin motorcars, eight abreast, in four lines either way, which all glide along at the same pace. The green is due to the motor-omnibuses, free from all advertisements, which dot the black river surface, that flows on for the five miles or so of the street, and has an occasional rock in the center of it. These rocks, which are really wooden towers from which the traffic is directed, are placed on the crest of the slight rises in the undulating surface of the street—I am afraid my metaphor is failing. In them a big green or red light shows night and day, and with its appearance the whole five miles of river suddenly stops or, equally suddenly, flows on again. When it stops, the waters divide, and vast crowds, mostly Israelities as of old, pass over dry-shod. Only those who inhabit the land of the free and the brave would allow themselves to be so strictly regulated in this and other matters. But let us examine now the perpendicular cliffs and the shore on either side.

"The cliffs in the early part of the street are more even in height. They begin with some old residences, but very soon are chiefly inhabited by agents for dry goods. By Twentieth Street, however, hotels and big stores begin, and the street loses such continuity of skyline as it ever possessed. From there onwards it is a series of strongly competing buildings which rarely extend even across a whole block. The effect, therefore, against the sky is very ragged, like an ill-grown set of giant teeth. No long cornice lines run through. There are no continuous roofs—indeed, very few roofs at all—to be seen. In a sense, therefore, it is not a street at all, only a collection of buildings, just as a checker-board town is not really a town at all, but only a collection of city buildings over ten stories high, for which no European precedent exists. But a true American type is beginning to emerge. Roughly, it consists of a rich group of stories near the ground, and an equally rich group near the top with a plain stalk between.

"With Central Park the character of the street entirely alters. One cliff disappears, and in its place you have the small trees, grass, and taxi-cab race-tracks of the park. On the other you have individual houses, a few very vulgar, most of them very restrained and elegant. The park itself, though, is a failure. Its winding drives and small hummocks of hills cannot hide its rectangular shape, which the increasing height of the buildings is every day making more evident. It should all be levelled into terraces and re-laid out in a formal manner. Fifth Avenue prac-

tically ends where the park ends at 110th Street, and before then begins to degenerate. But out of its five miles of length it has maintained its standard of fine, if competing, architecture, for three miles, and I know no other street of which that could be said."

THE REPORT of the Committee on Construction Industries as presented to the Unemployment Conference in Washington, is an historic, but not a remarkable document, save that it embodies what cannot be construed as other than an official Governmental pronouncement. In that sense it is indeed remarkable to find an industry so frankly and summarily dissected. The application of this particular scalpel reveals nothing new, indeed. We are no further on than before, except that the government has said that so and so is so and so, which is what others have said.

In the suggestions contained in the report there are two major recommendations. The Committee declares that the affairs of the Building Industry must be corrected by local representatives, and that "unfair practices" must be discontinued. If local groups can be persuaded to study their problems much more deeply but just as frankly as the report does, then perhaps they may arrive at that point which the report carefully refrains from attempting to reach. It is one thing to say that "unfair practices" must be discontinued, but quite another thing to tell how to get rid of them. Mr. Samuel Untermyer, for example, who has been instrumental in dragging a goodly number of "unfair practices" into the light, says that they cannot be done away with until from 500 to 1,000 prominent business men have been put behind prison bars.[1] We do not know whether lawyers are classed as business men, but as it is noteworthy that lawyers have materially contributed toward making "unfair practices"as safe as possible, one assumes that Mr. Untermyer's desire for a wholesale jailing is not limited to a narrow field. However, who can imagine that it is possible to jail a thousand prominent business men? Who can imagine that it would do any good?

A graver question is challenging society? The challenge is being avoided, mostly, and yet here and there, among the Guildsmen of England and among certain labor and ethical organizations in this country, a steady inquiry is being directed at discovering whether Business for Profit can be carried on without "unfair practices." That is the point toward which it will be wisdom to direct our steps, for we cannot declare what is unfair until we are sure what is fair,—and in the element of profit, is there yet any rule as to what is fair?

[1] From a press report of a speech delivered to the New York State Association of Real Estate Exchanges at Syracuse, October 7.

Perhaps the Congress of the Building Industry, the local groups of which have anteceded the recommendations of the Unemployment Conference, may be stimulated now to a further and deeper inquiry. Let us by all means find out what is fair practice in business, and it will not suffice merely to affirm the Golden Rule. What is fair practice when it is translated into dollars and cents?

What is historic in the report in question is that a Governmental Conference has ended by recognizing that few emergency measures are of avail and that an industry is faced with a problem which has too long gone unrecognized and which will now require to be dealt with by first studying the facts. Therefore the permanent body proposed is at least an auspicious sign.

Consider this report in connection with Mr. Holsman's analysis of the Landis Agreements, so-called, and much becomes clear. Mr. Holsman writes from intimate experience since he represented the American Institute of Architects and the Illinois Society of Architects at the Arbitration proceedings. He has prefaced his analysis of the Agreements with an explanation of his own economic concept, in which he contends that there is a public interest and concern in all buildings. This is indisputable. The sooner we get to recognize it, the better for all concerned.

Students of esthetic questions will at once concur in this theory. So will students of economics, we believe, even though they might take exceptions to his theory of the distribution of the products of industry. Many would assert, at once, that his theory takes no account of Economic Rent, or the money now paid, in many ways, for no service rendered whatever, but we commend his study of the labor situation and the Landis Agreements to the careful study of all architects. Whether they like it or not, the affairs of the building industry are becoming their vital concern, and the fact that Mr. Holsman participated in the arbitration proceedings at Chicago, that Mr. Edwin H. Brown, a former Director of the Institute, was a member of the Committee on Construction Industries at the Unemployment Conference, that Mr. E. H. Russell, a director of the Institute is Chairman of the National Board of Jurisdictional Awards, that a Vice-President of the Institute, Mr. Robert D. Kohn, is Chairman of the Congress of the Building Industry, and that any number of Institute members are participating in the local branches of the Congress, is an indication of the changing attitude of architects. They are realizing that the architect is a part of the building industry, that he cannot escape the obligations thus imposed, and that in architecture the art is likely to be bettered through a conscientious assumption of these obligations rather than through preachments and persuasions.

C. H. W.

The Labor Situation and the Landis Building Trades Agreements

By HENRY K. HOLSMAN, A. I. A.

I. The Labor Situation

"All building construction is burdened with public interest," begins Judge Landis's statement in support of his demand for a revision of labor agreements and "working rules" so that the service rendered under the rules would justify high wages and inspire public confidence in the integrity and economic soundness of the building industry in Chicago. Private buildings are of public interest and the labor conditions and principles involved in the building trades agreements negotiated under the guidance of Judge Landis are filled with vital interest and public concern.

We have heard much of the virtues of the propagandist's high-sounding phrase "collective bargaining." Collectively bargained agreements are faulty if they provide only for increasing profits or wages and advantages and fail to provide means for lowering costs, or otherwise disregard public interest or public economy. Union laborers have been misled into the belief that little production and much waste, coupled with enforced monopoly and high wages would somehow inure to their advantage. The Landis agreements vitalize the principle that wages, salaries and profits depend not on the cost of living, or overhead expense or attempted monopoly, but on the value of the service to society. Economic problems are not solved by lamenting that greed and avarice are increasing; it may seem so because the power to manifest them is more widespread. It is of little use to rail about the land question or decry our fundamental institutions for the division of labor, distribution of profits, or Capitalism. The main difficulty lies in a universal misunderstanding and neglect of the fundamental ethical and economic principles involved.

When the building trades employers' associations, parties of the first part, and the corresponding trades unions, parties of the second part, asked Judge Kensaw M. Landis to arbitrate the main difference between them and to fix a wage to go into their collectively bargained agreements, the validity of the whole structure of associations and unions, and their practices and policies went on trial. It was stipulated that the arbiter would have nothing to say about the terms of the agreements or the working rules unless the parties could not agree on any particular clause, when that clause would be referred to him as umpire.

After two or three days of consideration, finding that a reduction of 20 per cent in wages would make only about six per cent reduction in building costs, whereas the waste and inefficiency lurking within the rules and regulations governing the workmen, if eliminated, would amount to a reduction of from 15 to 25 per cent in building costs, the arbiter announced to the parties in the arbitration that he was unable to fix a just wage without examining the agreements and working rules involved, whereupon the proposed agreements and working rules were submitted to him for examination. Under such circumstances it is probably inevitable that several questions should arise.

What of the moral and legal aspects of agreements to which a judge may be a party by affixing the wage clause. The public is much concerned with the bargaining of one organized group of society with another parcel of citizens when their respective interests so nearly coincide that an agreement on wages and working rules may be virtually a conspiracy respecting wages and prices for a quality and quantity of production or service to be charged to the public, and enforced by organization and power so derived, upon all citizens, as a law or decree in the making of which they had no voice and gave no voluntary consent. Associations of employees and employers may have a right to make agreements on wages and regulations of skill and productivity involving the price of ordinary commodities, wherein the public may take or leave the product, but buildings are a quasi-public property differing from ordinary commodities in both the method and purpose of production and having a more fundamental influence on society. Every private building is of public interest. Whatever the disposition of the immediate owner may be, his building will be regarded by the public as beautiful or ugly, as useful or a nuisance. The disposition of any building will eventually be of supreme concern to the public, and the value of every building and its cost, relative to other products, may be a community asset or liability and of moral benefit or detriment to society.

Builders and building craftsmen are, in a very vital and immediate sense, servants of society endowed with great responsibility for its future welfare, and may have no right arbitrarily to agree among themselves to fix prices or place a limit on skill or quality and quantity of production that they will, by force of allied organizations or virtual mob rule, impose upon the public. Individual initiative in house building is a public benefit. Every additional building owner makes an additional credit possibility, creates an additional property security to the nation's wealth and an additional urge for all forms of public improvement and induces additional interest in the welfare of the community, state and nation. All unnecessary hindrances and hazards to the building instinct are public calamities.

Good buildings have a very wholesome influence on all who see them or use them. The farsighted, patriotic, cultured citizens of high integrity of character enjoy work well done and would build the best buildings; but citizens of that character abhor connivance in monopolistic price fixing or curtailment of skill or productivity. The existence of strikes and lockouts, with their attendant system of intimidation, graft and frightfulness in the building industry, deters the best of us from engaging in building or owning buildings stained by such a hellish spirit of war. Only those who can not work well and prefer to cheat or who enjoy a fight or who are willing to spend much of their time at destructive and subversive practices

and little at increasing skill and facility, will eventually be engaged in any industry conducted in such a manner.

The preamble of the Landis "Uniform Agreement" states the purpose of the agreement to be "for preventing strikes and lockouts and other waste and unnecessary and avoidable expense, annoyance or delays, making building costs as low, stable and certain as possible consistent with fair wage rates and for the advancement of labor and management in skill and productivity." Surely if agreements and working rules providing for a periodical adjustment of wages and embodying such purposes in a practicable manner could be solemnly entered into between associations and unions and faithfully carried out they would command the respect and support of the public, and unionism could be firmly established as an economic institution. But can any collectively bargained contract for wages be enforced? In the building trades, for any community, it involves a uniform agreement with all trades directly or remotely connected with building operations, for, if any one trade,—the teamsters, for example,—have n ot made an agreement similar to the other trades, that one trade could be used as a cat's paw for any or all of the other trades and thus defeat the purpose of all the agreements and cause the collective contract to fail.

An agreement on working rules regarding skill and productivity, elimination of waste and an economic division of labor and management can be agreed upon through collective bargaining and should be enforced by law; but an attempt in such an agreement to hold wages high or low in opposition to natural laws of supply and demand will probably fail and thus weaken the moral force of the whole agreement, because in the building industry a collective bargain must result in a collective contract covering a considerable period of time and commodity prices may easily fluctuate within that period to such an extent that any fair contract for wages for one period may be wholly unfair at another within the life of the agreement. Moreover, a fundamental principle is thoroughly established in America that a contract for human labor can not be enforced to the detriment of the laborer. Either that fundamental principle in respect to labor must be abandoned, even to the extent of slavery or serfdom, or collective bargaining for wages as it is now promulgated must fail. If organized labor could make a bargain with employers respecting wages in such a manner that the monetary part of the agreement would hold throughout the contract period and the necessary fluctuations would be taken care of by the organization itself in a profit and loss account, that kind of a contract might be made valid and enforceable by law, but it would not be a collectively bargained contract in the prevailing sense.

It is reported that when Chicago contractors began to hire non-union carpenters under that clause of the Landis agreement providing that if after 48 hours notice the union fails to supply a sufficient number of men, then the contractor may hire non-union men who shall by that fact be entitled to a permit to work until such time as the union supplies sufficient men to take their places, the carpenters' union allowed union carpenters to work as non-union men at $1.00 per hour, the wage awarded, to prevent the real non-union men from working, promising to pay them the balance of their claim for $1.25 an hour out of the union treasury. While that act follows the spirit of the above suggestion in a measure, it is quite impracticable, assuming the money paid to the members was to be obtained from the same members in the form of dues and assessments. When the leaders of Labor unions declare and enforce the edict that wages must not be reduced, they cause much confusion and incalculable suffering, and they place unionism on a false foundation that will eventually bring down the house.

The idea that labor can "beat Capital," in any way is equally fallacious. Capital is what is left over from production or saved after consumption. The man who permanently saves a dollar is of the salt of the earth. If he deposits it in a savings bank or invests it in permanent property it becomes capital-property or common wealth and he is a capitalist to that extent. Labor (of hand and brain) and capital are both necessary to carry on industry. Capital must have a share in the returns sufficient to replace the losses and expenses incidental to handling it in order that capital-property or common wealth may be saved. Labor must have a share in returns sufficient to cover losses, expenses, and the well being of the worker so that the laborer's capital-property may remain unimpaired and his savings be increased.

Since labor takes its share of returns first and before the productive process is complete, if the wage taken in the enterprise is in the end in excess of the laborer's proper share and he wastes or loses this excess by idleness or otherwise, then capital or the common wealth in which all participate is wasted, or consumption is greater than production. A continued waste or consumption of our common capital-wealth of this sort would land us back in barbarism in a short time. It is said that the Russian people have wasted in three years what it took them 300 years to gain. Such waste continually indulged in is commonly manifested first in a panic, and the accompanying efforts to adjust wages so as to effect a proper balance in continued productivity is spoken of as hard times.

Some complaint is made that labor does not get its fair share of production, but as long as labor takes its share in money at the beginning of the process and capital risks getting its share at the end of the process, and as long as our monetary system, good as it is, is so bad that the value of money fluctuates, the laborer's wage share in production may prove to be either too much, so that he could buy more than he produced, or too little, so that he could not buy enough. If money value and produce value or prices remained constant, or if their fluctuations were relatively in the same direction, instead of in the opposite direction as they are, periodical adjustment of wages might not be necessary. In the cotton producing industry within a year the price of the product went so low that the money paid for the labor of raising a crop was enough to buy it and the labor cost of picking it in some instances was more than the value of the product. Thus labor took a wage share that proved to be twice what it produced or all of the product and all of Capital's share and a much from the common capital account, that is, consumption was more than two times production in that case. As long as the price of commodities fluctuates it is foolish to attempt rigidly to fix wages high or low by contract or by collective bargaining, or by any other means.

When a general reduction of prices takes place on the products from which labor has alreay taken its share, then, if productivity is to be continued, Labor's wage-share must be reduced in order to save the common wealth or capital involved. Labor being the producer and original holder of Capital can not "beat Capital" without first beating itself. A proper readjustment between production and consumption can be accomplished in only two ways;—by adjusting the wage, leaving the rate of production as it was; or by leaving the wage as it was and adjusting the rate of production. A mere elimination of the waste incidental to productive processes may produce enough to restore the necessary balance between production and consumption without reducing wages. This is what a faithful execution of the Landis Agreements would tend to do. If the unions had a mind to do all they could to increase productivity and reduce the cost of building, then their friend, the arbiter, would be justified in fixing their wages at the next appointed time, February 1st, 1922, far above the average, but unfortunately their minds and resources are being directed in the opposite direction. If the resources now used in strife by labor unions could be used in producing skill and quantity, their services might rise to a bidding value and be quoted on the market the same as interest rates and produce.

What is said of unions may be said of employer's associations except as to wages. They constitute one party to labor agreements but the interests of both parties some times so coincide that they become as one either for or against the public. The true interest of employer associations lies in skill of management and increase of productivity. Any continued disregard of public interests or sound ethical or economic public policies spells disaster. Disarmament among the associations and unions is as vital to peace and prosperity as disarmament among the nations. Nothing is so fundamental to the economic adjustment of labor problems as that the rank and file of the labor element should be well and truly informed as to the fundamental principles that involve them in their necessary strife for a fair share in the returns from common productivity. Good associations and unions would be a blessing, but bad ones are a terrible curse upon society.

II. The Landis Agreements

In the Landis Arbitration the court room was transformed into a school full of unwilling pupils. Twenty-eight or thirty trade agreements were submitted. Most of the agreements were headed with several pages of general conditions consisting of two so-called uniform agreements—one of the Building Construction Employers' Association, applicable to all trades under its jurisdiction—and the other, differing from it in some respects, applicable to all trades represented by the Associated Builders. The preamble of these agreements stated the purpose to be to "prevent strikes and lockouts and provide means for a peaceful adjustment of disputes." The first paragraph of the first article of one of them stated, "there shall be no strikes or lockouts," and the second paragraph of the same article gave any one the right to strike for violation of the agreement or working rules, leaving the striker to be the sole judge of what violation had occurred. Another article provided that no man should leave his work because non-union men in some other line of work were employed in any building or job, and then inserted a clause in parenthesis,—"excepting new buildings and alterations of old buildings," thus nullifying the whole article and "giving the lie to the whole agreement."

Both of the uniform agreements contained the eight so-called cardinal principles, "as an absolute basis for their joint agreement and working rules." These eight principles had been in the agreements for 21 years, but the agreements were so self-nullifying that they were of little or no nominal effect and they had never been literally compiled with in fact by any trade. Is it any wonder that the sanctity of agreements should be lightly held when the agreement in question is self-contradictory and to violate any clause it is only necessary to stand on some other phase of the same agreement?

The arbiter began the work of cleaning up the agreements and working rules upon which a just wage could be predicated by announcing the following principles as a warning that the nature of the revised agreements would affect the wage scale:

Principles Governing the Consideration of Agreements and Working Rules Affecting a Just Wage Scale

ARTICLE 1. Monopolistic elements of associations or unions are intolerable unless,

(1) The public is served more economically with them than without them.

(2) Unless any one qualified may join them without hindrance or discrimination.

(3) Unless they serve any one on demand without discrimination.

(4) Unless sufficient apprentices be taught to supply enough skillful managers and workers.

(5) Unless working rules and conditions eliminate waste of time, effort and material; increase quality and quantity of product; encourage improved methods, materials and appliances; produce increased skill and contentment of the workers; and help to preserve peace in the community.

ARTICLE 2. Other things being equal, trades should have higher wages, or wages above the average,

(1) If the work is more hazardous.

(2) If greater skill is required.

(3) If a longer term of apprenticeship is required to become proficient.

(4) If the work is intermittent or unsteady due to weather or seasonable demand.

ARTICLE 3. Other things being equal, trades having rules or conditions that produce or permit waste should have a lower wage, or a wage lower than the average rate.

(1) Rules that limit or curtail in any way the amount of work per man, consistent with reasonable comfort and well-being.

(2) Rules that require ordinary travel to or from the job to be on employers' time, or otherwise waste time paid for.

(3) Rules requiring skilled men or high-rate men to do work that less skilled or lower-rate men could do, or that other trades could do more economically.

(4) Rules that expressly or by inference interfere with the manager or foreman in the dispatch of the work or the use of new or improved methods, materials or appliances.
(5) Rules that require work to be done by hand that could be done better or more economically by machinery, tools or other improved methods.
(6) Rules that require work to be done on the building that could be done better or more economically in the shop.
(7) Rules requiring excessive rates for overtime, or overtime rates for shift work.
(8) Rules requiring unnecessary foremen, shop or job stewards or pay for men or the time of men who do not render corresponding services.
(9) Rules requiring unnecessary helpers or assistants.
(10) Rules that limit the number of members in the associations or unions, or unreasonably limit apprenticeships.

These principles have been referred to as "The Five Beatitudes and Ten Commandments," "The New Magna Carta," and so forth. Not one objection was made or argument proposed attacking the validity of these principles; but it is too much to expect that all officials of associations or unions, whose minds had been working for years on conditions and working rules with a view of taking all that could be taken without regard to the public welfare, would suddenly reverse their attitude and realize that no clause that violated sound economic principles and the public good could stand or be enforced. Each side in many trades contended that their rules did not violate any of the principles, a fair construction of the English language to the contrary notwithstanding.

All agreements were examined and a copy of the principles and suggestions for the elimination or revision of all parts of all agreements violating the principles or contrary to the preamble of the agreements above quoted were handed to the representatives of each trade. A battle royal of wits ensued between the minds of the leaders of the building trades, familiar with all the minutiae connected with building operations, on the one hand, and the mind of the judge, on the other hand, who professed to know nothing about building, but who was keen to discern the unexpressed purpose and intent in the minds of the men before him. The arbiter had no power to dictate the terms of the agreements and could only make suggestions, but it was only necessary for either side to withhold assent to any provision in order to put it into the hands of the arbiter for elimination or correction. Were it not that the supposed interest of both parties often coincided, or that the contractors were willing to give to the unions one advantage over the public in exchange for another advantage to themselves this policy might have eliminated from the agreements more waste and might have resulted in higher wages.

The handwriting on the wall was plain and it was being interpreted by an able and conscientious friend of labor. Alas, there are some men who easily get drunk with power, who will not take counsel and are willing to bring down and destroy the most cherished institutions of their fellows rather than to depart from a habitual evil course of blind egoism or give up some fancied selfish goal. The proceedings plainly showed that neither trades unions nor employers' associations are free from such deadly perils. A few examples out of hundreds will suffice to show the process by which, during three months of hard work of education and negotiation, most of the agreements were finally made sufficiently clean to enable the arbiter to affix a just wage in accordance with the principles he had announced.

The arbiter suggested that all agreements should contain the clause: "nothing in this agreement shall prohibit an employer, contractor, or one member of a firm of contractors, from working on their own jobs on any building," and added, "if you do not put this clause into your agreement give me the number of employers and employees that would be engaged in your trade assuming all to be busy." While but few of the agreements originally had in them anything directly prohibiting an employer from working it was surprising to find that nearly all trades had been prohibiting such labor. Testimony was given to show that if a contractor visiting his job found a little work had been overlooked by the craftsmen who had gone from the job, he dared not pick up a tool and do the five minute task himself, under penalty, if caught, of being fined or his men taken away. He could not measure for a piece of needed pipe and bring it out with him ready for the workmen in the morning, because the rules provided that all measurements must be taken by the journeymen. Contractors opposed this "working employer" clause, arguing that they, with their office expense and organization, could not compete with the small contractor who "carried his office in his hat," if the unions permitted the contractor to work; that many journeymen would leave the unions and start up as contractors themselves; that these men would do the work in a slipshod manner, would be unreliable, and so on ad nauseam.

In one trade, union leaders contended that if contractors were allowed to work 50 per cent of their men would be thrown out of employment, arguing that only one or at most two men were required in this trade on the average building, and as their employers could do the work themselves in each case in a few hours, probably before or after regular hours at that, there would be no need of the journeymen taking the trouble to go to the building at all, in most cases. Manifestly if this were true, to balance the waste occasioned, the wage in that trade would be around 50 per cent of the normal.

The glaziers' union stoutly declared that if glass were permitted to be set in sash or doors at the shop instead of at the building, "95 per cent of the men would be thrown on the street without any means of making a living for their families." The representative of the five great glass houses, parties of the first part to the agreement, argued that they could not compete with the small contractors if the mills and painters and employers generally were allowed to set glass and their great businesses would be irreparably injured. The judge evidently discounted the big jobbers' statement, but promptly replied to the union: "If the life of your union depends on the enforcement of such a rule, you ought to disband before sundown." Evidently the two wasteful provisions agreed upon and stoutly adhered to by both employers and employees in the glazing trade were too much for the arbiter to equalize by any calculation according to the principles he had announced and he handed back the agreement, saying "I

will have nothing to do with it." They tried hard to stay in the arbitration, presumably to keep the public confidence, or was it in order to hoodwink the public? But as neither the employers nor the employees, in their repeated pleas for consideration, would consent to eliminate the wasteful or monopolistic elements, he could not be party to such an agreement by affixing a wage thereto. Perhaps he knew of the report that the Dailey Legislative Committee had revealed the fact that this same business agent of the Glaziers' union had been continuously carried on the pay roll of the man now representing the employers' association, and posing as his adversary, for no service, whatever that could be mentioned "by advice of counsel," etc. Whether he knew it or not, the rules themselves were sufficient to justify his act.

A curious contrast was shown in the attitude of unions toward helpers. The tile setters required one helper to every journeyman, regardless of the size or nature of the job, or whether any or one or more helpers were needed, but they promptly adopted the arbiter's suggestion that the number and use of helpers should be left to the judgment and discretion of the employer, in the interests of economy, rather than have the wage reduced to balance the waste occasioned in cases where the helper would have nothing to do.

In the pipe trades that attitude was reversed. These unions demanded a reduction of the number of helpers in proportion to the journeymen, or no helpers at all. Manifestly if a skilled mechanic insists that he must do the pure labor of carrying the materials and appliances from the sidewalk into the building and distributing them throughout the building, even though in some cases laborers could do it just as well, leaving him meanwhile to attend to the skillful work he alone could do, he would be entitled only to laborer's pay for the common labor work he claimed and thus obtained against the interest of his fellow laborer and the public by union methods of force. A contracting concern in these trades estimated that if the rules be revised permitting them to thread pipe in the shop and permitting them to use their judgment in the use of helpers and apprentices for the fetch and carry and assistant work it would make 17½ per cent less labor cost and they made an affidavit to the effect that the difference would be faithfully carried into all their bids.

In the agreements of all the trades in the Landis arbitration many of the old rules permitting or producing waste are conspicuously absent. In most of them all wasteful and restrictive rules have been eliminated and the arbiter in his decision announced that if the unions of any trade having any such rules, would announce a willingness to eliminate them from their agreements, and do so before the first of November, 1921, he would revise the wage accordingly. Of course each union knows whether it has insisted on such rules or not, and it is safe to assume that if those whose agreements are in accord with the principles announced will go along and carry out their agreements, the other tradesmen will get tired of helping to pay for the waste their rules occasion or by a discount on their daily wage, and demand clean economic rules and a justly higher wage.

The differential situation presents the most difficulty in carrying out the wage award and was doubtless the most difficult problem for the arbiter. Two years ago when the demand for labor was great and men were scarce, a horizontal wage was given all trades regardless of the usual differential due to skill, hazard, or the intermittent character of the work. This and the subsequent raise to $1.25 per hour for all trades and $1.00 per hour for labor was conceded by the contractors, probably on the theory, then discussed, that it would stop building and force an equitable adjustment or bring about the open shop. That it did greatly contribute to building stagnation and much unemployment and that it did nearly bring the open shop, is undeniable. It is unfortunate that this error had to be corrected at the same time the cherished "make-work" rules had to be abandoned and the wage reduced, because the application of the usual differential and the 12½ per cent reduction together bore heavily on those trades which had been getting too much in proportion to their sister trades.

That a bricklayer or plasterer should get a certain percentage more than a carpenter or painter is indisputably just. If the wages in cities and towns throughout the country, where the law of supply and demand is more or less free to operate, be averaged, a natural differential between the wages paid the several trades will appear. This natural differential is about the same as that shown in the Landis award, barring the wages lower than they would have been if the working rules had been free from "make-work" or wasteful provisions. Some idea of the viciousness that can find its way into written and printed union agreements, not to mention unwritten rules that may be enforced, is shown by quoting the text of the arbiter's award on the plasterers' agreement;

"In it are many provisions designed to produce waste, increase cost and monopolize the business. The foreman is made subject to union rules; rules are laid down to be obeyed by property owners contracting with plastering contractors; it assumes to extend the plasterers' jurisdiction beyond the fair limits of the trade; it requires an employing plasterer to register with the union semi-annually and a union man may work for no contractor not thus registered. The effect of the foregoing is (that the employing plasterers' association permits the union) to subject the public to union rules apparently in exchange for the power of the unions to force 'all plastering, regardless of the nature of the structure' into the employing plasterers' hands."

"The foreman is required to ascertain whether employees are in good standing in the union and to collect fines and dues for the union by withholding money for wages due for work. Over-time is fixed at double the regular rate, or $2.50 per hour, and the agreement provides that continuous over-time (apparently shift time) shall be given to those not regularly employed. The agreement limits to union men the right to use tools, thus prohibiting any employer from even doing patch work on his own job. It is required that all cast work except in limited amount shall be done at the building by members of a sister union. It is also required that ornamental plastering shall be contracted for by the employing plain plasterer, under penalty; that a plasterer will not work on the building where the ornamental plastering is let to another contractor; that the original contractor must finish (do all plastering on) the job or any part thereof (in any building) for which he may have a contract; that no plasterer will work on such a job for anyone except the original contractor, etc., etc."

Some of the new provisions of the Landis Agreements are:

"Each separate trade agreement expressly adopts the Uniform Agreement and provides that it shall control as against any conflicting working rule, * * * This Uniform Agreement provides for the peaceful adjustment of disputes by arbitration, subject to appeal to the National Board for Jurisdictional Awards, under whose decisions all parties agree to comply; that men will not stop work individually or collectively under penalties prescribed except only when an owner attempts to construct a building with non-union men (in violation of the agreement) while putting up another building on which union men are employed, and when the employer fails to pay employees for work done; and in case of scarcity of help non-union men may work with union men until such time as union men may be obtained; that any journeyman may use in his work the tools of any other trade; that small tasks of not over thirty minutes' duration in any one day belonging to any trade may be performed by any other trade at the discretion of the employer; that over-time work over two and one-half hours beyond the regular working day shall be compensated at one and one half times the regular wage; that overtime work beyond this and over-time work performed Saturday afternoons and holidays shall be paid at double the regular rate; that shift work shall be paid at the regular day rate; that contractors not affiliated with these associations may avail themselves of all benefits of these agreements by either joining the associations or paying the regular dues and fees that members pay; that the union will provide men to any contractor whether a party to any agreement or not, under the rules and at the wage provided in these agreements."

"It is expressly agreed and stipulated that there shall be no restriction as to the amount of work a man may do, nor against the use of machinery, methods or appliances nor against any raw or manufactured materials except prison made. Employers may employ or discharge whomsoever of the union they please, and employees may work for whomsoever they see fit, and the foreman is to be exclusively the agent of the employer."

Twenty or more trades agree that nothing shall prohibit an employer or one member of a firm of contractors from working on his or their own jobs.

A particularly important change was made in all agreements regarding the work covered by the agreement. Formerly this clause was in the form of a jurisdictional claim and usually enumerated a long list of things, including things that were claimed by other unions or that might be done by other trades or that might be done in non-union shops and this jurisdictional clause has in the past caused many disputes between trades and many strikes that had to be settled before buildings could proceed. All trades of the Landis agreement have eliminated this jurisdictional matter by providing that all work undertaken by the parties of the first part (employers) shall be done by parties of the second part (the employees) subject to the decision of the National Board for Jurisdictional Awards, thus making the employer responsible for the kind of work he may contract to do, and placing on him the initiative for settling disputes between unions as to the kind of labor they shall perform, according to the provisions of the uniform agreement and reference to the National Board for Jurisdictional Awards.

Formerly if a contractor undertook to do certain work on a building, his tradesmen would no sooner attempt it than another union claiming it would "strike the job." Then the contractor absolved himself by a strike clause in his contract and shifted the settlement of the dispute to the owner. Under the new rule the contractor, party to these agreements, assumes the burden of taking or rejecting the work his tradesmen can or can not do. This responsibility will require him to ascertain if he can perform the work before he undertakes it or make reference to the National Board for jurisdiction or be liable for damages for breach of contract.

"The Building Industry," says Judge Landis in his noted decision, "had gotten into bad repute." "There was a general disposition to keep away from it as a thing diseased; capital avoided it; the wise dollar preferred almost any other form of activity, or no activity, and this applied to the whole range of building construction from the cottage to the sky-scraper." Bankers intrusted with the investment of our common capital, investigating the building industry found 70 or 80 per cent of the cost, from the mine and forest to the building, is labor at a very high rate, and they found this high cost to be increased by all sorts of costly delays, annoyances and graft, and worst of all, found among 47 or more associations and unions, rules and regulations of waste and inefficiency taking great monkey and parrot bites out of the little remaining cheese available for sustaining the life of the building industry, and they called a halt on the capital side.

Thus the great building industry, the largest single industry in any city, was virtually stopped and everybody suffered. If the price of ordinary commodities becomes too high the public may decline to buy and substitute something else. Buildings are entirely different and there is no substitute. The cost of buildings or the rent of buildings in which all articles of commerce are made or stored or sold and the rent of the buildings in which persons engaged in such commerce live, is accumulated and added to the price of every commodity and every service. If the cost of ordinary commodities rises too high the damage is comparatively temporary, but buildings endure. If buildings cost too much, or only a few of them cost too much, the excessive rent of all of them must be paid by all of us over and over again in the price of everything we buy.

Building tradesmen have by some process been misled into the belief that rules and regulations permitting or producing waste, curtailing production or monopolizing industry would in some way inure to their advantage, but obviously such temporary advantage spells permanent detriment to them in common with all their fellows. Thus builders and craftsmen are in a very real sense public servants. We are confronted with a condition, not a theory. What will the unions do about it?

If in Chicago they faithfully carry out the agreements they have entered into and signed before Judge Landis, unionism will deserve and should receive the hearty support of the public. If the leaders are so blind to the workmen's interests or so faithless to their pledge to the public as finally to treat those agreements as mere scraps of paper, building trades unions and associations are doomed in that city. In either event the wisdom shown by Judge Landis and his fidelity to the laboring man and to the public will be of lasting benefit to the whole nation.

Towered Cities

By GEORGIANA GODDARD KING

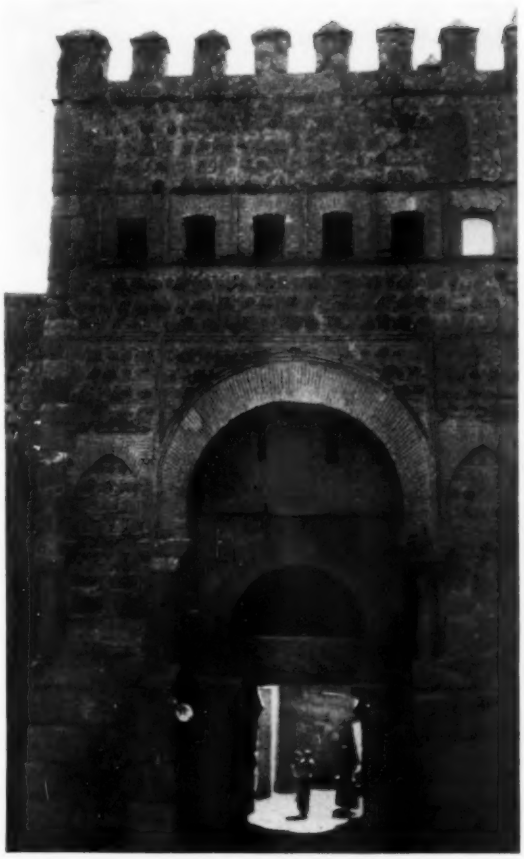
Photographs by E. H. Lowber[1]

OF THE ancient East we read how the rulers sat to judge at the gates of cities; there the incidents of a thousand tales befell. A part of Spain's mysterious relation to the immemorial East may be felt in this, that the city gate should play so great a part in history, in legend, and in the memory of travellers. It is typical of a score of instances that in the old romance of *The Death of the Master D. Fadrique*, as the doomed and unconscious Prince reaches the entrance to the city where he is to die, a warning meets him:

"At the gate called Macarena hard by I met a clerk."

It was in a sunny corner outside the Meadow-Gate of Valladolid that the two hospital dogs of Cervantes' tale used to lie, Scipio and Berganza, who held their famous *Colloquy* one winter night. Indeed the inn and the city gate supply between them the only two scenes necessary for all romantic narrative, an interior and an exterior; anything may happen there. In Spain, thanks to the *octroi*, there is still an arrest, with incident, at the entering into a city, and thanks to the diligence there is still in the roadside house a hearth, or a counter with cooled water and wine and fruit-syrups, to which all the diverse and unacquainted company descends. The traveler today still feels the breath of romance blowing, as he enters the wayside tavern or passes through the city gate.

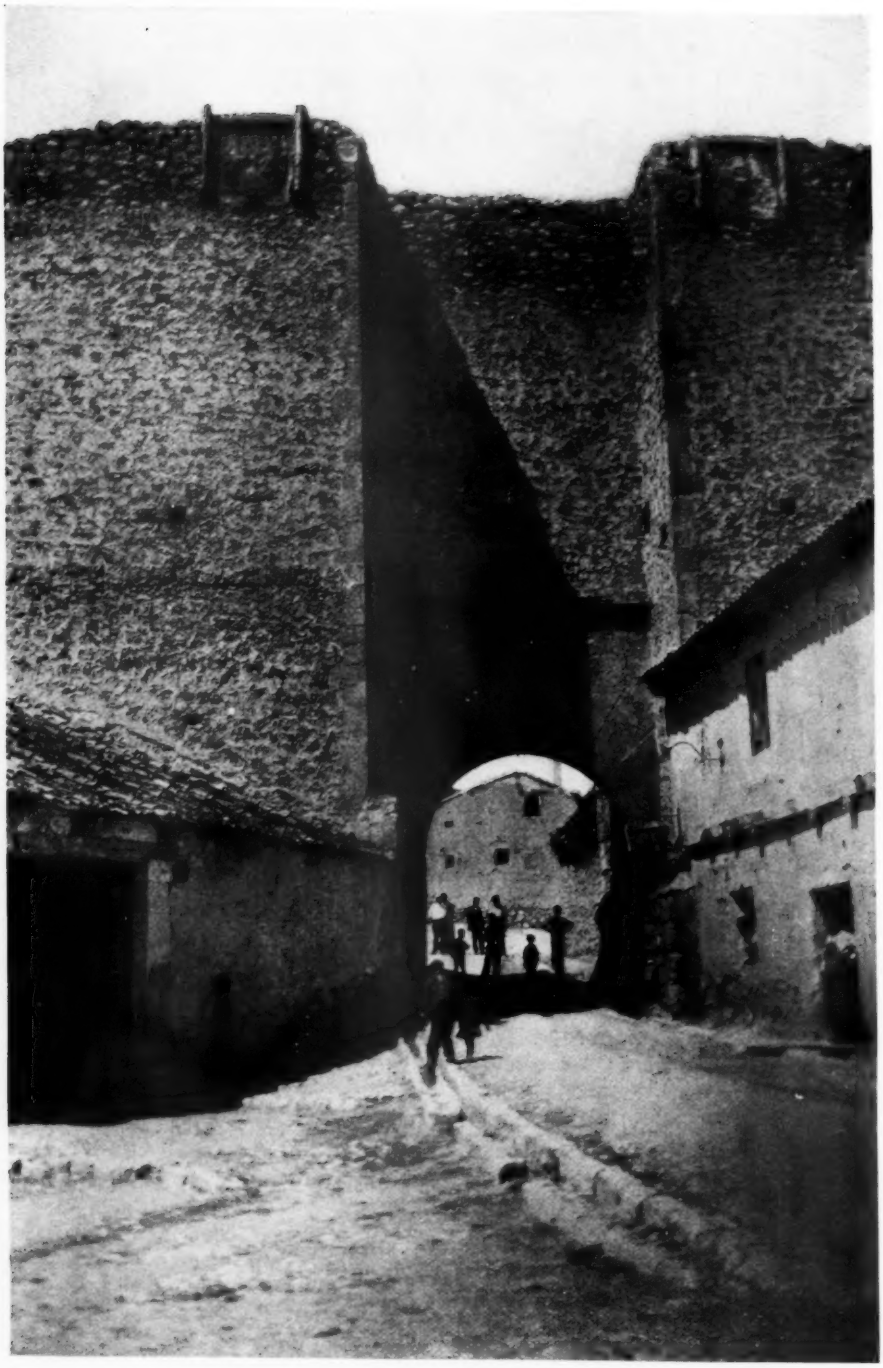
The walls are yet standing that engirdle many a city in Spain, from Lugo to Utrera and from Morella to Ciudad Rodrigo; nowhere perhaps more impressive than at Lugo. Where the Romans walled their garrison town the successive centuries have but repaired and restored, and today you can walk all the way around, crossing the grey vistas of the principal streets on ancient granite archways, now facing the Greco-Roman façade of the Romanesque cathedral, again looking down on the city side into gardens fragrant with climbing rose and slender magnolia, or on the outside, at the potters' market, studying the exquisite antique forms of water-jars and cooking-pots, nowhere so classical as at Lugo, and dark and ringing like bronze. The view embraces a wide reach of golden plain, with mist-blue mountains lifting along the edge, and a deep green sinuous line where the clear brown Miño winds, while in the immense pale dome above, that comes down below the level where a man is walking, the white white clouds sail and sail; while voices of children and dogs come up from the still hot city, and from the shady walk outside, the rustle and murmur of leafage in the untiring wind.



Toledo—The Old Visagra Gate, long disused.

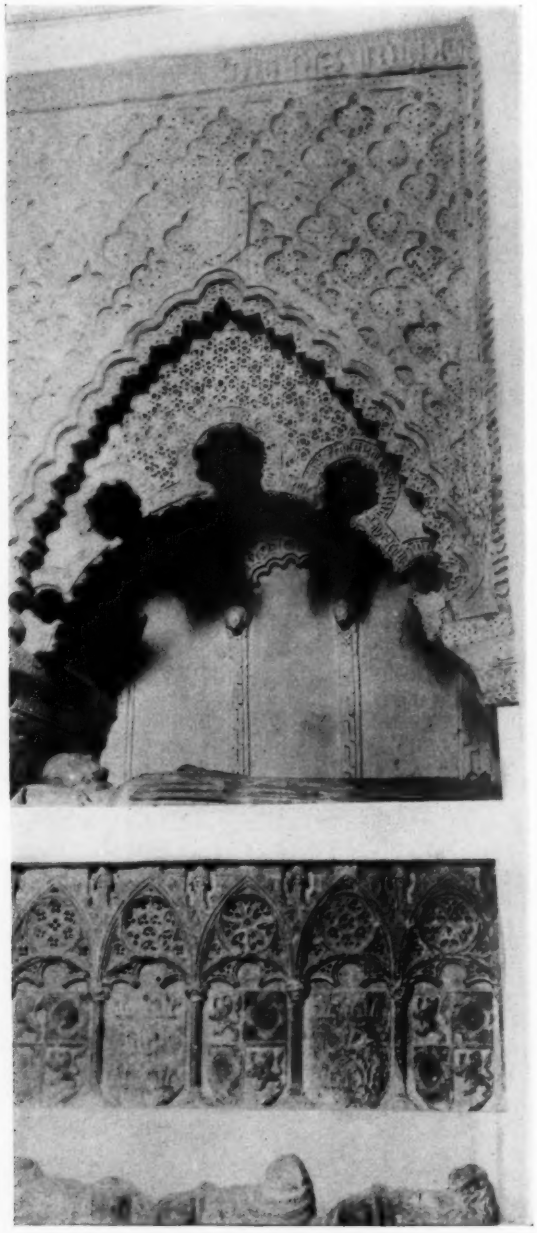
Lugo is very old, with an immemorial civilization, and the walls still ring her around in every memory. In other cities another memory may survive capriciously. At Toledo, though the Puerta Visagra is work of the ninth century, yet the traveller forgets everything but the Cathedral, and faces the horse-shoe arches with a sort of imaginative distrust. At Saragossa the only gate which remains belongs to the eighteenth century and the traveller seeks it out sedulously through long hot well-paved avenues, or through dust and flies, re-reads his Byron and looks

[1]Photographs by permission of the Hispanic Society of America.



CUELLAR—A Gate in the Second Circuit of Walls.

Lugo—Under the City Walls.



CUELLAR—Pierced Stone and Moulded Plaster Tomb.

up at it long, reflecting that the love of liberty is not yet extinct in Aragon.

Three little cities there be, however, which lie far from the traveler's way, and two of them accessible only by diligence, Cuellar and Daroca and Madrigal de las Altas Torres; so enchanting, so ripe in their mellow *picaresque* atmosphere, that the present authors are loth to reveal how easy it were to come upon them.

We set out at six after waiting awhile on wicker chairs in a neglected garden, in the fragrant freshness of a summer sunrise among the cabbage-roses; the little mail-coach that held six inside, was full when it passed, we climbed to the places beside the driver and for hours and again for hours moved between golden miles of level stubble, barred with tall pine-groves, sun-shot, aromatic, and clear of undergrowth. We crossed the frontier into another province and found the horizons different; there had been mountains on the rim, but now the horizon curled up like a wave. Once a castle rose as suddenly out of the plain as a startled rabbit might have reared himself up to look. The villages bore magical names, straight out of a romance, like Bracamonte de Mosén Rubin, and when Madrigal finally lifted far to the left and we turned, we heard the church-towers ringing already for Mass.

It is hard to say why Madrigal looks so lowly, for all its great memories and its romantic name; the low houses, the wide ways, the level horizons all count for something, perhaps. The walls have been broken down for the most part, except where hovels built against portions now support what once sustained them, and though the gates are there, the gate-towers, like those of Valencia and Cagliari, and those of Avignon and other south-of-France strongholds, are unwalled and hollow on the inner side. All is the same warm, friendly pinkish brown of the regional brick-work, and the streets are dazzling with fresh whitewash. The town is of brick architecture entirely, except for one façade of grey stone, very hard, carved in low relief late in the sixteenth century, a humble dwelling built into it, like a stork's nest into a temple in Egypt.

At S. Nicholas, the principal church, the Mass had just begun; we stepped in softly and knelt at a bench where good townsfolk in mantilla moved up to yield room. In the sanctuary we could see, indistinctly, two splendid marble tombs of the early Renaissance; in the choir behind us, delicious eighteenth-century painted woodwork, pale willow-green and rose-color and gilding, and above, a little rococo organ of pale olive gold that whimpered and sang and seemed to take most kindly to motets and gavottes, as it filled the pauses of the office. But the marvel of all was the ceiling, a superb *artesonado* of three bays that curved downwards to the columns of the nave and swept up again to repeat *da capo*, with, over the entrance to the sanctuary, an octagonal dome that corresponded. The dark and sumptuous woodwork drank up the light so that we never got a proper photograph; nor, so far as I know did any one else ever, so that it must remain like a summer sunset

and a rose-garden and a moonrise over the sea, a memory simply, but a memory of the most purely beautiful ceiling in Spain, with its intricate interlace of fleeting poylgons overlying and interpenetrating the deep, rich tri-dimensional space-enclosure that fairly pulsed and withdrew in its modulation of the ascending forms. There must have been such another in the aisle, which has gone now; probably it decayed and was taken down to save the expense of repairs. Indeed the whole of the church has somewhat decayed, though even into the nineteenth century it kept collegiate rank and maintained six or seven chaplains.

All about on the floor were set the *hacheras*,[1] little racks of lighted candles that are memorials of the dead; under each was spread (and this oriental bit of ritual we had not remarked elsewhere) a true prayer-rug, though for the poorest it might be only a square of white linen edged with pillow-lace; and there the women knelt. Hither came, after Mass, to each in turn, the junior *cura*, and for a bit of money put into his *beretta* said a prayer or two for the dead, ending with a blessing. Though we had no candles lit there, yet we too remembered our dead, and the priest as well; we dropped a peseta into the cap when it came near, and the prayers were long.

[1]The curious reader will find a discussion of these *hacheras* or *sepultados* in *The Way of S. James*, vol. II, p. 151.

Anon we wandered into a little café, where the landlord invited us to take possession of our house; he knew how to touch the strings cunningly, and one of his little daughters had a gift to sing *coplas:* another danced, and the slavey danced with her and danced better; and we remarked what differences exist among stringed instruments, between guitar and *laud* and *pandera*.

A bishop of Burgos gave rights to the townsfolk here; Alfonso VIII confirmed them in 1168. Here King John II was married to Isabel of Portugal. The palace-nunnery where their child Isabel the Catholic was born, looked like the Sleeping Beauty's castle, embowered in tree tops, with the window-lattices of tiles, the flat tile-like brick that they make hereabouts, as Romans made them before. There are many associations with Madrigal besides those of the good queen Isabella; I think that here was born the great humanist Tostado, whose exquisite tomb is the chief jewel on the brow of Avila cathedral, and here was buried the scholar, poet and mystic, Fray Luis de León, whose name is fragrant in the halls of Salamanca University. In this wide and arid land they understand the value of green fluttering leafage, which here is chiefly of acacia and poplar and musical like the sound of running water; and the fountain is pure and sweet and musical beyond comparison; it is like an oasis in the desert, like a

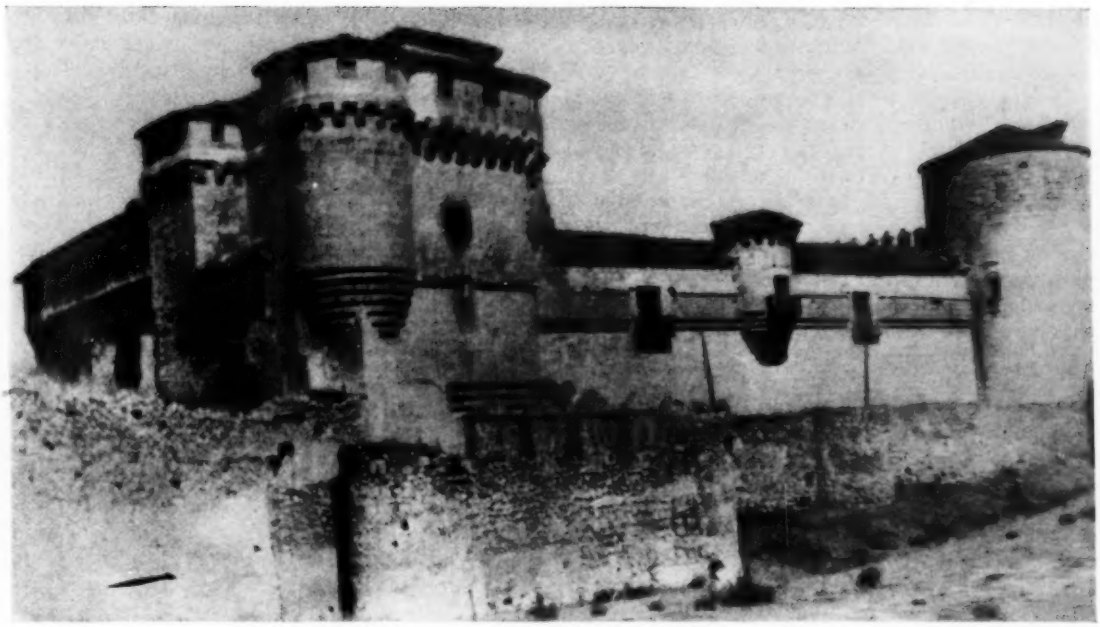
Madrigal de las Altes Torres—The Fountain by the Gate.

DAROCA—The Walls and Towers.

song in a city room, like the syllables of the name itself, *Madrigal de las Altas Torres*.

Madrigal, by virtue perhaps of the Catholic queen and a pretty hospital that bore the date of 1447, albeit the *patio* was set round with Doric columns of granite, remains in memory at the fifteenth century, even though the tombs of the *collegiata* were dated 1559, and the ceiling was contemporary with them. Cuellar on the other hand, high-seated and princely, remains forever and immutably Renaissance. The churches are of all ages; one huge in the Square remodelled in the solemn seventeenth century; one showing such clumsy flying buttresses as S. Francesco at Bologna, and like it no more fit to fly than a penguin; one, whereof the local name might be rendered S. Mary in Steep-street, boasting a Romanesque doorway opening on the cemetery. S. Francis was built in the sixteenth century and is now utterly destroyed. The nuns of S. Clare have apse-buttresses united by deep and high arcading that recalls the churches about Trani. The ten parish churches nearly all still exist, and nearly all are brick-built: S. Salvador and S. Andrés, S. Estéban, S. Miguel, S. Martin, and many another, set their multiplied arcades about façade and flank and apse, while pointed arches yield to round-headed and then to square compartments, and the shallow scalloped cornice and pointed band with sharp triangular shadows that bricks make being set diagonally, recall the North of Italy to such as know not Sahagún or Calatayud. S. Andrés, extra-mural and high-up, over against the castle, has a round-arched western door (now blocked) where a beautifully moulded torus alternates with a square order, a couple of sharply carved capitals top the jamb-shafts, and five stubby brick ones the mouldings of a gigantic multiple arch, slightly pointed, that soars from the red soil almost to the wide eaves and marks the vaulting lines within. The tower rises behind a flanking apse.

When S. Francisco, within the citadel, was destroyed, the great tombs disappeared, and none may say where lies D. Beltran de la Cueva, the lover of Queen Joan and reputed father of the poor princess whom Isabella the Catholic supplanted. On his sepulchre of alabaster in the middle of the choir once he lay, and his second wife and his third on either hand; but his first wife, Doña Mencia de Mendoza, and his brother D. Gutierre de la Cueva, who was Bishop of Palencia, with other fragments of the princely sculpture of alabaster, and a later tomb of a noble descendant and his spouse, are safely housed after their wanderings in the Collection of the Hispanic Society in New York. In S. Estéban there are still four tombs in the wall-recesses of the sanctuary, dated 1509, which are partly, I think, of



CUELLAR—The Castle, Mainly Sixteenth Century.

moulded plaster and partly of stone-work carved and pierced, and all whitewashed alike. At any rate, the style is that especial variety of late *Mudéjar* which we associate with Enrique IV and the city and region of Segovia. Like all brick building, these churches mostly had timber roofs.

The city is very ancient, Roman at the least. The Archbishop D. Rodrigo names it among the towns reconquered by Alfonso VI; at the dawn of the twelfth century it was an organized municipality, by the middle of the thirteenth it had its charter or *fueros*. Here the King D. Peter made his fantastic experiment, after divorce, in matrimony with Doña Juana de Castro. It came to D. Beltran at the same time with his title of Duke of Albuquerque; in that house still it remains. The site is of great importance, commanding a gap in a long spine of clayey hill and overlooking the approach to the Guadarrama, with the Douro valley behind.

The walls are complete, both the inner and the outer circuit, and the gate towers are as well-enclosed on the inner as the outer face, tall and well fortified. The town long since spread far beyond the walls, nor has it shrunken since. Along the steep street, now mud, now dust, that skirts the town, climb low-browed houses, but among these the Magdalen Hospital lifts an exquisite late-Gothic portal of grey stone carved and moulded. If you would see the Square, with town-church and town-hall and *soportales* like the Rows in Chester, and all that goes to make a self-respecting little burgh, you must turn sheer to the left up one of the steep little streets that mount toward where the castle crowns the incline, but stop short at a wall or wind deviously seeking a gate, and there in the narrow paven ways you may make out the ancient armouries over the doors of timber-and-plaster houses, or, over the gate-towers, now the cauldron of the great House and again the horse's head which is the badge of the City.

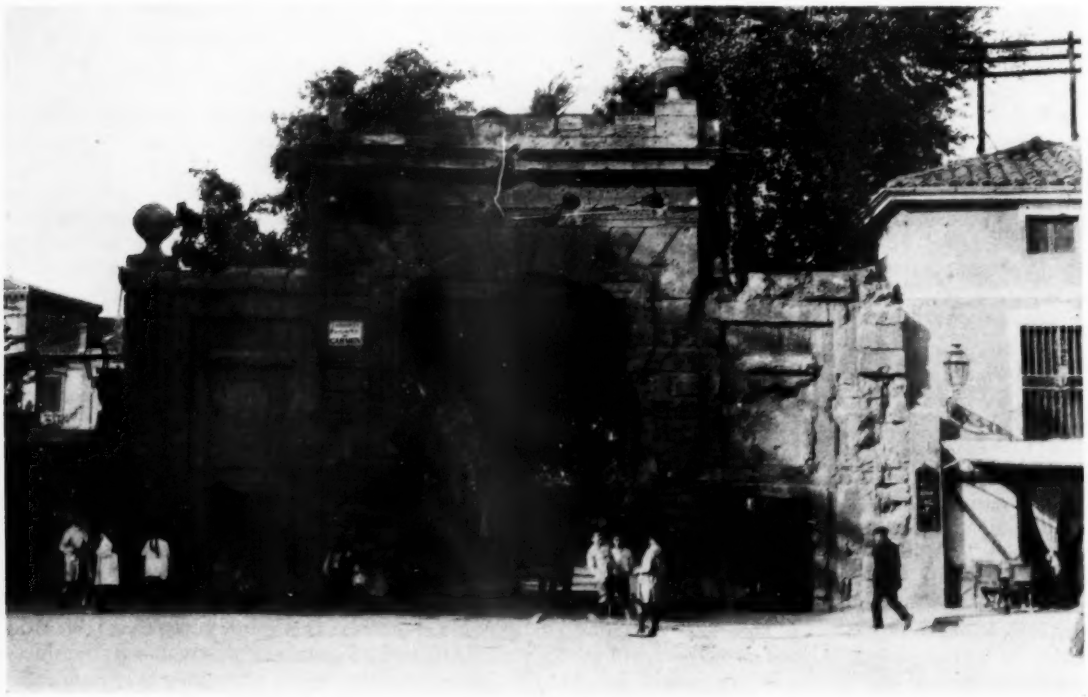
That the Castle seemed to Ponz one of the finest things in the world, even apart from the collection of armour and weapons and of trophies of the chase which in his day furnished it, is no marvel; empty and dismantled, so it still seemed to us. Builded in the middle of the sixteenth century, when the Duke was serving in Flanders fields, it kept for a window here and there some of the vanishing Arab grace, and incorporated all the new and Italianate loveliness, adding thereto a touch of the substantiality which only maturity knows, and which Titian and Palma can make so enchanting. Around the central court runs a double cloister of flattened arches, above which loggias open; the great stair mounts up from one corner, storey by storey; from the highest, another gallery, facing outward, looks abroad, mile beyond mile, across the brown town that falls away steeply to town-fountain and stream-side washing-places, across the steep edges of the primal clay plateau, across dense pine woods and the burning gold of stubble, till it would seem you could see a

shield flash on the ramparts of Turégano, or catch a beacon flare from the churchtower of Sepúlveda, or a smoke-signal from the very walls of Segovia. The huge and circular keep, probably the oldest part, occupies the outer angle of castle and wall, being barely tangential where the two coincide, and sheltering under its vast flank a threshing-plain in the grain-field. Diagonally opposite another circular tower commands the gate house along-side; turrets rise on concentric rings of corbelling that make a pleasant pattern of sun and shadow; and the battlements long since were built up and roofed over for chambers sweet with sun and air.

The Castle dominated the town in truth as in the traveler's memory.

The inn at Madrigal had been typical of its own place and estate in the humbled town of the Castilian uplands; approaching, over a half-door you looked into the *zaguán*, floored with flints and ceiled with blackened beams. The mules clattered across this to the stable that opened on the right, and the brick-built mangers that stretched back into darkness. If a traveler came in after them he might mount by a staircase on the left to two big rooms from which opened alcoves, each with a clean bed and a washing-stand; three alcoves from one and two from the other, and the rooms were like private sitting-rooms with a centre-table and a red table-cloth and comfortable chairs. But downstairs, under these and behind the *zaguán*, opened a humbler dining-room with the invariable provision for washing before meat. Hereabouts was the kitchen, where a fire of chaff whispered and winked under the chimney-hood, and kept the *puchero* at a low simmer. And the well, and the cellar where wine and water were cool, were situated in the *zaguán*, before and behind the staircase respectively, and there was also a little counter and den, for the sale of cool drinks to all comers, not unlike the glass cage to be seen in old-fashioned English inns. The entire plan, with possibly a few modifications, might be recommended for a road-house here, in the Adirondacks or on the Atlantic shore, where many motors pass, some stop for meals, and a few travelers want to sleep,—as cool, convenient, compact yet airy, democratic yet sufficiently reserved.

The inn at Daroca was more pretentious, like a scene from Cervantes or Dickens. Under a wide archway the motor-bus rattled into a huge court yard, surrounded by stables, hay-lofts, and magazines of all sorts, including one to keep the travelers' heavy luggage under lock and key. From beneath the archway a monumental staircase mounted, with wide landings to bed-rooms above; and on the inter-



SARAGOSSA—The Only Remaining Gateway.

mediate floor, looking over the street were the public rooms and some state apartments cut off by a baize door. I never quite understood why we in America, with the habit of tall buildings and the accommodation of a lift, still set so much of our occupancy on the ground floor, amid the dust of the street and the curiosity of passers-by. Further along were the kitchens, and the family quarters over the entrance arch looking into the yard. Your Spanish landlord lodges his wife and daughters usually a little better than his guests, even though he lets them serve you; here there was black old furniture, a piano, a bookcase, and old china under glass, and, as always, the woven table-cover and the long bent-wood rocking chair. In the next room the raised hearth under a hood and the flanking benches on it, were disused, for all the cooking went on somewhere beyond at a modern charcoal range; but here stood also the green-glazed Forty-Thieves jars that stored water for washing and cooking, while on a shelf outside, in the shade, cooling, sat brown water-jars fetched dripping from the fountain.

That fountain at Daroca lay beyond the gate at the town's foot; there from eight worn lions' heads the water perpetually rushed into a marble trough and ran away in a long stream, tree-bordered, to join the brook beyond. The single wide High Street swept through the town from gate to gate in a single curve, and on one side little alleys climbed up steep steps to the crumbling red walls, but on the other the town stretched out its warm-coloured flanks like a tortoise-shell cat in the sun. Above, a ruinous castle crowned so steep a hill that we never ascended, and the ancient circuit of the walls enclosed green gardens and vine-garths and orchards and threshing-floors; noble churches rose unexpectedly around a corner, or streets ran through their towers. *Casas solariegas*, the abodes of old families unforgetful of their honour, reared multitudinous quarterings and unfamiliar armouries, with here an *ajimez* window and there a Renaissance cornice and yonder a cottage half-door and beyond a pedimental portal.

To the latter history of the Reconquest and the age of D. Jaime I *el Conquistador*, the story of Daroca belongs; but the collegiate church is of that admirable fifteenth-century Gothic, lofty and spacious, which is so apt for a city's needs, noble, serene, and comfortable. It is rich with adornments of all the centuries, for it enshrines and commemorates a very precious miracle, and all the gifts are not incongruous in their splendours, no, not the baroque high-altar, not the pseudo-classical flavour of the west front.

Two of the side chapels are crammed with early paintings, the remains of retables by many hands; one of these presents in the central panel, under a canopy, the figure of the apostle S. Thomas, the patron of all architects and builders, and in six flanking compartments the story of his journey to India, and the House not made with hands, of his building there. Near by, in sharp contrast with the hard blues and the dry ugly forms of this, glows a superb[1] altar-piece of S. Michael, with twenty-five or thirty scenes from the legend of the Archangel and the life of S. Mary. By its style I take this to be conceivably the first identified work of that mysterious master Lorenç Zaragoza. Sure it is that the school of Valencia and the school of the brothers Jaime and Pere Serra here meet and mingle in rich and romantic colour, delicately-modelled gold relief, and a tender and gracious personal beauty not to be missed by those who know the altar-pieces of Manresa, S. Cugat, and Segorbe. Some pretty and curious wall-painting in a church further up the hill, shows traits more French, but all this work at Daroca constitutes a school of its own, where Catalan and Valencian are interfused and interwoven like gold and silk in the brocade of a cloth of honour.

The chapel of the Corporals is all of the most flame-like and exotic flamboyant Gothic. An open screen, a play of shadow and little twinkling lights, make magic there. The precious reliquary itself, which was shown at the Saragossa Exhibition in 1904 and photographed by Emile Bertaux, is enclosed within a great shrine of the fifteenth century and invisible except on special days.

The shrine of Daroca, like that of Orvieto, was constructed for a Miracle of the Host; it is one of those evoked by the founding of the Feast of Corpus Christi. A parchment of the year 1340 is still preserved[2] (as I understand) in the archives of the *collegiata*, sealed with three leaden seals still pendent, relating what happened at the castle of Luchente or Chiu, wherein the Alcayde, the *cura* of the church, and the Justice and Council of the place, testify to their knowledge of what happened there ninety years or more ago.

When the kingdom of Valencia was peopled by Moors, D. Berenguer Dentuça with troops of Calatayud and Daroca and Teruel and other places, raided the kingdom of Valencia and captured cattle and Moors; the Moors watched the Port of Chiva (or Chiu), caught him there as he was returning and cut him off. There was not a chance. Then D. Berenguer ordered a clerk of Daroca to say Mass, and the troopers to confess to one another; and when the clerk began to say Mass and to consecrate the wafer which is the Body of Jesus Christ and laid It

[1]The style of the work is closely approximate to the Catalan altar-piece of S. Andrew in the Metropolitan Museum, wrongly attributed to Borassá.

[2]I take this account, with verbal condensations, from an article by the late Rev. D. Roque Chabas, Canon of Valencia cathedral.

on the linen cloths—the Corporals—It turned to real blood. Then the said Mass-priest, vested in a very fair tabard of scarlet and mounted on a white mule, rode forward bearing the Miracle and went ahead of the troopers, and the Moors fled, and they killed many. All the Communes there represented wanted the blood-stained Corporals; thrice they drew lots and Daroca won three times, but the others were not satisfied; finally the white mule of the clerk of Daroca being allowed to go freely where he would, went to S. Marcho near Daroca and knelt down there. So the Corporals belonged to Daroca and a church was built and then a more splendid one, and there they were laid up and there they are still. The Moorish king meanwhile had built a castle in the Port of Chiva and the King D. Jaime when he took Valencia gave it to D. Berenguer Dentuça who raised a chapel to S. Mary and many pilgrims come. And at night in that chapel singing is heard and lights are seen and lamps are found lit that were left unlighted, and the singing is in praise of the Blessed Mary, Mother of Our Lord Jesus Christ.

Canon Chabas inclines to think that the miracle happened after the chapel was built; it matters little except to those technically interested in hagiography. What matters is that the legend enshrines two pretty things; the chapel with lights and singing as though the Grail were there and Sir Percival or Sir Galahad were soon to pass thereby, or this were Monserrat, which lies indeed not two hundred miles to the north-east; and the picture of the Mass-priest all white and scarlet, on the gentle white beast, holding up the blood-stained linen cloths before the host.

Arbitration and Some Questions.

THE FACTS: An Owner engaged an Architect to prepare plans for a country residence, having in view a cost of $30,000. The Architect wrote a letter to the Owner in which he advised him that his full charge for services as Architect would be 8% plus traveling expenses and that in case the Owner concluded to abandon the proposed erection of the house, the rule of the American Institute of Architects would prevail.

Five sets of preliminary drawings were prepared by the Architect all of which indicated skill and good taste. The final set were pleasing to the Owner; in fact all the drawings led to the perfecting of the ideas of Owner and Architect and indicated an intelligent approach to the final coming together of minds.

The Owner did not reply to the Architect's letter which set forth his charges for professional services but continued his services and on examination acknowledged the receipt of the Architect's Communication. In due time the Owner was called upon to pay the Architect $500.00 for the preliminary drawings; he called at the office of another Architect and was informed that he could have preliminary drawings prepared for $150.00; still another Architect offered to prepare the drawings for $100.00. Both of these intervening Architects stated that the proper fee for the whole work was 6% and not 8%. The Owner concluded that he had been imposed upon, refused to pay the $500.00 for preliminary sketches and to continue a contract calling for a fee of 8%.

THE SEQUEL: Both parties agreed to arbitration and finally selected an Arbitrator (an Architect) personally unknown to either; the agreement for arbitration involved an abandonment of all right to Judicial review.

The Arbitrator was accorded great liberty in examination and placed on record the education of the Architect, which proved to be as follows: He prepared in academic schooling to the extent that he was admitted to the School of Architecture of one of our great Universities; he studied Architecture in this school for some years, learned to draw well and to acquire hopes that will probably never be realized; inspired by this hope he went to Paris and spent four years in study at the Ecole des Beaux Arts. He then returned to this country and practiced for six or more years. Some of his clients confirm him in his opinion that he is qualified to plan a neat, artistic, comfortable and sensible kind of a country house.

The Architect spent 120 hours of his life on the particular work in question; a well paid draftsman spent 40 hours in the same occupation.

The Architect had to eradicate the ideas usual to the Owner who in this case had an excellent wife also with ideas.

The Arbitrator brought all of the Architect's history and training to the attention of the Owner by testimony and proof, and asked the Owner to present his version if it were in any way contradictory.

The response of the Owner was prompt; he insisted upon paying the $500.00, apologized with humility to the Architect, promised further employment when conditions permitted and insisted that it was his obligation to pay the fee of the Arbitrator; he stated that the life history of an Architect was intensely interesting and enlightening to him but characterized the business sense of those engaging in such a profession in far from complimentary terms.

The Arbitrator remains disturbed because certain questions are not answered and will intrude:

1st. How many preliminary drawings constitute "preliminary drawings"?

2nd. Did the Architects who expected to get $100.00 or $150.00 intend to place any time limit on their services for such sums?

3rd. Can an Owner be compelled to pay for "any old" preliminary drawings or possibly for sketches approved by the Architect as his idea of what the Owner must have?

4th. Is an Architect face to face with the possibility of being compelled to spend his entire life on a set or sets of preliminary drawings or abandon his claim for $100.00 compensation?

The Owner in this case seemed to be a just man, but suppose that he declared that the preliminary drawings were entirely unsatisfactory to him, and suppose that the Arbitrator had reason to believe that the Owner was intelligent in his opinions? Truly there should be some light on the question of preliminary drawings.

Communicated.

President's Conference on Unemployment

Department of Commerce

Report of the Committee on Construction Industries.

The Senate Committee on Reconstruction and Production estimated in March of this year, the total construction shortage in the country at between $10,000,000,000 and $20,000,000,000.

During the World War, private construction and construction of every nature not contributing to War purposes, was prohibited. After the signing of the Armistice high costs prevented the resumption of genuine construction activities. The investing public in this field has not had confidence in the stability of values; they have not been able to determine if and when the cost of construction reached a point warranting their investment. A RETURN OF CONFIDENCE IN VALUES IN CONSTRUCTION will assure MORE EMPLOYMENT than in any other area. Considering all branches of the construction industry, more than 2,000,000 people could be employed if construction would be resumed.

To Secure Confidence: There are three outstanding factors in the building and construction situation, which have the greatest bearing on the resumption of construction activities. They are FINANCING, MATERIAL COSTS, and LABOR COSTS.

These factors present questions which can not be settled in a national way; they must be investigated by those interested, in each community for itself. The questions are:

(a) Can the prospective investor finance the operation at a reasonable cost?

(b) Does the cost of construction materials to the prospective investor, properly represent the reduction which has been made in the wholesale prices?

(c) Is labor in the particular locality working at fair rates and giving fair value in the quantity and quality of work done?

If local conditions prove satisfactory, there is no reason why work should not proceed immediately. This is especially true of persons contemplating the building of their own homes who are now paying rentals based on inflated values. That this fact is being realized is shown by current statistics. During the month of September of this year, residential building amounted to 39 per cent of the total valuation of contracts awarded in that portion of the country north of the Ohio and east of the Mississippi Rivers.

Financing: Money must be made available on reasonable terms and in reasonable volume and free from demands for bonuses and commissions of a questionable character.

The Savings Deposits of the people are the natural economic source of loans for home building. The aggregate is ample for this purpose, even though a portion is protected by adequate investment in more liquid securities to meet withdrawals. There would be no difficulty in the Financing of Homes if the fundamental principle of the use of long-term deposits for home loan and long term purposes were generally followed.

In every section of the country owners have declined to start new projects on account of the financing charges, both the interest rate and the commissions and premiums paid for floating loans being discouragingly high. Commissions and premiums varying between 10 and 20 per cent have been charged in addition to from 7 to 8 per cent interest. For example, before the first work of construction was begun the owners of an apartment house were required to pay for the million and a quarter involved, an interest rate of 7 per cent, and a bond premium of 1½ per cent, and a floating charge of 10 per cent, making a total financing charge of 18½ per cent. The financing charge of a subsequent loan of $250,000 for the same structure was $75,000. This is a charge of 30 per cent. It is doubtful whether the margins received by the architect, the contractor, and by all rhe producers in the basic industries involved aggregated a sum equivalent to these financing charges.

When an owner must pay such a sum before construction work even starts, many projects have necessarily been abandoned in the face of a continual need and demand for building.

While excessive financing charges for building have not been exceptional, many savings banks, trust companies, and insurance companies have maintained a conservative loaning policy with regard to real estate and home building and the building and loan associations of the United States with their two and a half billion dollars of assets, have been conducted with exceptional efficiency. Underlying the whole matter of the financing of construction there is, however, the sound banking principle that long-term deposits and the savings accounts of the people, should primarily be used for long-term purposes and should not be intermingled with speculative and commercial business.

Material Costs: Many construction materials have been substantially reduced. Some may have been reduced to a point which is retarding production. It is apparent, however, that other construction materials have not yet been reduced in keeping with the trend of wholesale prices on other commodities. Manufacturers of such materials should be urged to promptly make their readjustments to a reasonable basis. They must realize that failure on their part to do so is not only limiting their own business but it is also interfering with the production and sale of other construction materials; it is interfering with greater employment; in a word, it is a contributing factor to holding back the progress of the entire industry.

In many instances retailers of construction materials have not yet followed the reduction of manufacturers and wholesalers in their resale prices. This is an important subject to be taken up locally in each community. The retailers must be shown the necessity of bringing their prices to local buyers down to a point consistent with the reductions made in wholesale prices after taking into consideration increases in freight rates or legitimate increases in cost which exist in other directions.

Labor Costs: This can not be regulated by national action. The cost of living, rentals, and working conditions differ in various communities. Where fair wage adjustments have not been made, construction is held up. Such conditions should be dealt with fairly and frankly between employer and workmen and reasonable readjustments promptly made.

Approaching this subject, we believe that the employer should not permit the wage of his workmen to go below that point at which it not only provides sufficient to take care of the necessities of life but also enough to enable the family to educate the children properly; to provide reasonable comforts and conveniences and to permit systematic savings even though small. In the comparison of wages for building artisans with those of other industries, due allowance should be made for seasonal unemployment.

The workman, on the other hand, should deliver maximum production with proper interest in the welfare of the business out of which his wages are paid, and should eliminate restrictions and measures which tend to interfere with his production or with the production of others. Stoppage of work through jurisdictional controversies in the construction industry should be permanently abandoned as measures detrimental to the public welfare.

As a factor contributing to the necessarily high costs in some localities, is the continuation of unfair practices.

Unfair Practices: Notwithstanding the improvements which have taken place in some instances, with respect to the practices in the industry, it is apparent that there still exist trade abuses, waste, and unnecessary expense. It is a first essential of the proper development of the construction industry on a sound basis that all practices which unnecessarily retard the work or add to its cost should be immediately discountenanced and abandoned, if the confidence of the public is to be fully restored.

There are certain restrictions or limitations which were placed upon the industry during or since the War, which should be removed.

Reduction of Freight Rates: This group recognizing that transportation problems are not within its peculiar province desires, nevertheless, to express the conviction that every reasonable step should be taken, necessary to enable the railroads to resume their customary activities, and to reestablish efficiency, economy, and regularity in transportation service.

Readjustments of, and reductions in freight rates on construction materials are essential to a sustained revival of building activity. Increases in rates on construction materials imposed during the war left the construction industry under a relatively heavier handicap of increased transportation costs than had been imposed on most other commodities.

To this war-time increase in freight rates has since been added an increase of 25 to 40 per cent, thus perpetuating and even magnifying the effect of the war-time policy of restricting general construction activity.

The construction industry can not effectively function under a freight rate fabric artificially distorted by the continuation of restrictive war measures. A great economic waste would be incurred if, because of failure to reduce and readjust freight rates existing plants for the production of construction materials had to be abandoned and a new alignment of producing facilities established in accordance with the present rates, a fabric originally designed, in the public interest, to discourage the very thing which, in the public interest, the Government now desires to encourage; that is, the normal operation of industry. The financial burden of such a readjustment of plants would have to rest ultimately upon the public; and its necessary effect would be to curtail existing competition and to limit the radius of distribution of many of the construction materials.

In addition to such readjustment of freight rates on construction materials as will permit construction activity, freed from unnecessary artificial restriction; it is urged that such inequalities as may after such general readjustment, exist in the rates on various construction materials be investigated and removed by the Interstate Commerce Commission. We suggest the consideration of the practicability of encouraging during winter months the transportation of materials used in road and other construction work thus utilizing transportation equipment which might perhaps otherwise remain idle.

Transportation Priorities: The development of the art of building through the adoption of new and economical scientific methods of construction is retarded throughout the country by the building codes of the various municipalities, which differ flagrantly as to floor loads, wall thicknesses, and other elementary requirements which should be comparatively uniform, climatic conditions excepted. It is the opinion of competent authorities that as much as 20 per cent would be saved in certain cities by the adoption of building codes based upon modern scientific knowledge. The codes of nearly 40 of the cities and municipalities are now in the process of revision. The Secretary of Commerce has appointed a committee of recognized experts to study the principles upon which the building codes may be standardized, which committee is cooperating with the building officials in the various municipalities. A material saving in the yearly expense of city building may be hoped for through investigation and cooperation along these lines.

Statistics: There is a definite need for statistics properly coordinated, accurately prepared, and furnished promptly —affecting production, capacity, and distribution of basic materials in the construction industry. The present confusion and limited information through handling by several departments is causing unnecessary expense to the Government without giving complete data and service to the public. Arrangements should be made as promptly as possible, so that such statistics can be furnished by the proper department.

Recommendations: It is recognized that the construction industry is a key industry, that there is a vast amount of construction needed and that this construction work would afford employment to a large number of men directly and indirectly, and would result in the creation of permanent and useful wealth, translating wasting labor into earning capital.

To meet the present unemployment emergency and to make renewed activities in the construction field possible does not require special concessions to the industry. But it does require a complete and prompt removal of unnecessary handicaps, restrictions and limitations, both direct and indirect, these including credit, freight rates,

priorities, undue costs in relation to labor and materials, wasteful building codes, and the like.

In the resolutions adopted at the Conference on Friday, September 30, 1921, the Governors of the several States were requested to summon representative committees with the cooperation of the Mayors or otherwise, to—

(a) Determine facts.

(b) Organize community action to secure adjustments in costs, including removal of freight discriminations, and clean-out campaigns against combinations, restrictions of effort and unsound practices where they exist—to the end that building may be resumed.

It is recognized that this request of the Governors must be followed up by suggestions of a practical, workable nature, which will enable the administrative officer in ecah State to carry out the suggestion promptly and in the most satisfactory manner. It is recognized, also, that to secure the elimination of restrictions and limitations which have been placed on the industry, as previously referred to, that intelligent and sustained effort must be put into the situation. It is therefore recommended that Secretary Hoover, in continuation of the policy of the creation of local organizations inaugurated by the Department of Commerce, the National Federation of Construction Industries, the U. S. Chamber of Commerce, and others, appoint a committee selected from the various elements interested in construction, such as financiers, labor, engineers, architects, contractors, material manufacturers, and others to be known as the Committee on Construction Development, which will be charged with the responsibility of preparing and making effective plans for—

(a) Cooperation with the Governors and Mayors in the several States in carrying on community conferences on construction, to the end that local restrictions may be eliminated, abuses done away with, and proper local attention given to the efficient planning and development of construction work, as it is only through such community conferences that the local situation can be properly appraised.

(b) The prompt removal of unnecessary or inequitable limitations and restrictions which have retarded real constructions activity.

Such committee to use agencies and to adopt such plans for conducting its work as may seem to it best, in cooperation with the Secretary of Commerce. The work of such local committees as have already been organized in the country has had a profound value in readjusting the construction situation and the time is ripe for their more definite and extensive organization.

Community Planning and Housing

CLARENCE S. STEIN, Chairman of the Committee on Community Planning, *Associate Editor.*

CLIMBING THE GREASED POLE

By *Frederick L. Ackerman*

THE WRITER has previously observed that under the present system the gains made by architect or engineer in the matter of designing more adequate buildings are immediately capitalized in terms of price and that this capitalization of purely technological gains amounts to the same thing, from the standpoint of the common welfare, as would have been the case had the architect done nothing at all to advance the art of building.

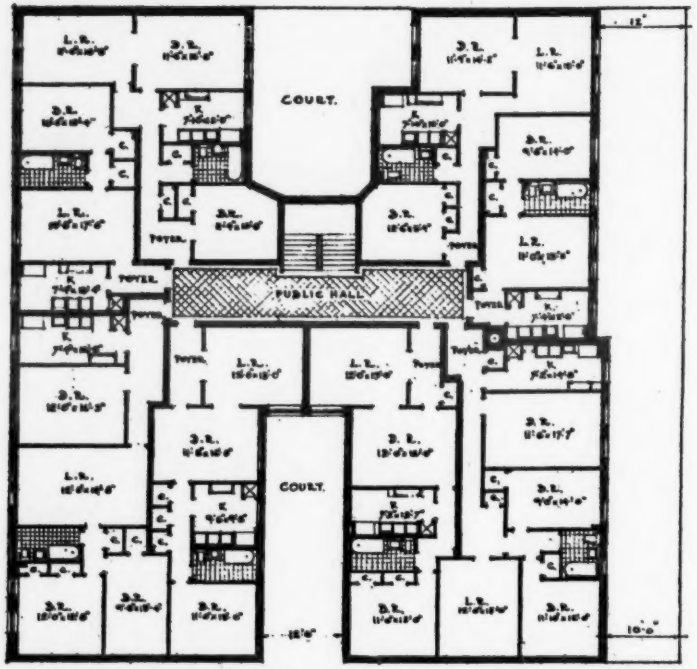
Now comes added evidence of this in such shape as to dispel any doubt as to the validity of the assertion, if one stops long enough to think about it. And what is more, this evidence runs to show how it is that financial business—business traffic—stands squarely across the path and blocks technological advances.

To put the matter briefly: an architect, Mr. A. J. Thomas, has recently developed designs for a tenement house upon a plot 100x100, which is approximately 25 per cent less in volume than the stereotyped tenement house usually built by speculative builders and investors upon plots of this size. But the buildings of this new design contain exactly the same number of rooms and the same number of apartments of the same or of greater size—far superior as to arrangement, with all rooms adequately lighted with large courts, and with no unsightly fire escapes. The superiority of this new design is so obvious, particularly with respect to the large courts and adequate lighting, that it requires no argument or demonstration to persuade the layman of its merits.

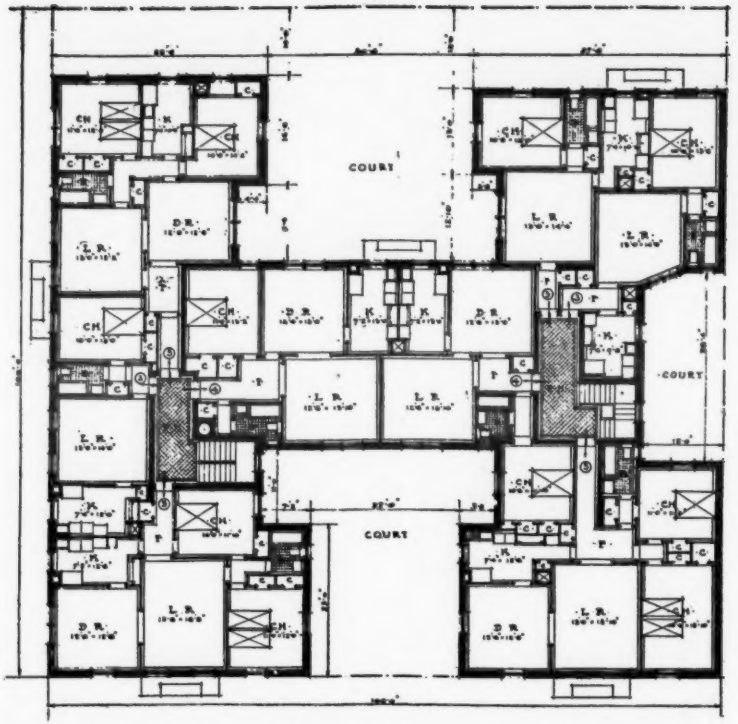
So one might assume that the speculative builder would jump at the chance of erecting buildings from this design. For, one may argue, if it is possible to make a saving of 25 per cent in volume with something like a corresponding per cent in price, if the building is in all respects superior, surely the same or even a greater rental may be obtained from it. And no one can deny this argument and no one denies that the net returns from such a building would be greater by a considerable margin.

But the speculative builder or the investor ordinarily requires a loan. And loans in the case of this kind of property are ordinarily a fixed percentage of the product obtained by multiplying the volume of the building by the going price per cubic foot. So that it is obvious that the maximum loan which may be obtained upon a building of this superior sort, insuring the same net return, will be less than in the case of a building of the same capacity but much larger in volume.

Now one might assume that this condition would not



Stereotyped Apartment House Plan, Walk-up Type, New York City. Corner Lot 100 x 100. Percentage of lot occupied by building: 79. Rooms per floor: 32.



Improved Plan, Same Type, Same Number and Size of Rooms, but Occupying only 67% of lot area. The plan referred to in Mr. Ackerman's accompanying article embodies still further improvements, greater outside exposure, allowing space for large garden, with same number and size of rooms, and covering but 62% of lot area. *Andrew J. Thomas, Architect.*

stand to restrain the speculative builder or the investor from erecting buildings of this type. Surely the equity required would be less and the return upon equity correspondingly greater. But it happens, strange as it may seem, that the basis upon which the speculative builder and the investor rates a plan or the work of the architect is not the matter of planning or the matter of volume or even the net return from his investment. Builders of tenement houses have come to judge the plans they "buy" from the architect by the magnitude of the loan which will be advanced by the lender. Ordinarily, the greater the loan advanced upon a building upon a given plot, the higher the plan is rated. By this standard is the architect judged.

So that as it works out, the speculative builder says: "What you say, Mr. Architect, about giving me the same number of better apartments for a smaller price may be very true; but that is not the way the lenders look upon the matter. I cannot get as big a loan on your superior set of plans."

Of course, all this sounds rather fishy; but if anyone has doubts let him try, say, one of the plans recently developed by Mr. Thomas upon a speculative builder and let the speculative builder proceed to secure a loan. The result of this experiment will, I am sure, dispel all doubt. The speculative builder will return and say: "With that other plan covering a greater percentage of the plot I can get a very much larger loan. It therefore is a superior building after all; so let me have it."

Apparently we are confronted with this condition: if one designs a better building and if that building be erected, it will be sold or it will be rented at a better price, though it may cost less to build. But the chances are that such buildings will not be erected. For buildings are built through the use of loans, and loans are based upon the magnitude of the building and not upon its quality as regards arrangement. Superiority—those qualities which go to reduce the cost of construction and provide adequate light and air count negatively—that is to say, they count merely to reduce the chances of the superior building being erected.

One may overlook the error of judgment on the part of the speculative builder who stands somewhat in awe of the lender of money. But it is not so easy to overlook the attitude of the lender, notwithstanding the condition that his business is the capitalization of gains in terms of price. His refusal to take into account the all important factor of design—the economic use of material and labor—that is not to be passed over lightly.

For it is not to be denied, as the work of Thomas has conclusively shown, that a greater profit may be had from more adequate structures. This observation is made not with a view to lending support to a policy of making adequate structures the means to greater profits; it is no more than a businesslike observation.

Of course, the point of all this is that the community might have far more adequate structures under the existing system if the lenders of money would give some slight consideration to the technical side of the matter with which they have to deal. But giving consideration to the technical side of building is a technical matter, and not a matter of business traffic. To proceed to the building of our communities with a view of making the most of the technological knowledge and ways and means available would be to proceed to dispense with business traffic. So one must conclude, taking all things into account, that Mr. Thomas and those who would now produce more adequate structures if they but had the opportunity are somewhat ahead of their time. As yet the technician is engaged in what has all the appearance of an attempt to climb a greased pole.

Around the Secretary's Table[1]

By The Secretary

Mr. Davidson: One of our best means of local advertising in Washington is the Octagon, and if it is to worthily represent the Institute, and be indeed the "shrine" for the profession, the Directors should attempt to arrange, in some manner, for sufficient funds to repair it properly.

Mr. Pond: I quite agree. The old relics, pictures, scrap books and the old records seem to have been placed in storage or destroyed. At least they have disappeared and the Octagon instead of being a shrine that should be visited by every member of the Institute has been transformed into a bleak, rather dismal, inadequately furnished office building.

The Secretary: I believe the Directors feel just the same way.

Mr. Davidson: Then why don't they do something about it?

The Secretary: So far as funds have been at their disposal they have done what seemed to them the necessary items for repair, and as a matter of fact a good deal has been done, take it all in all, during the past few years. You all remember the decision of the Minneapolis Convention to create a fund to develop the Octagon property and establish it as a memorial to McKim.

Mr. Little: How much has been secured?

The Secretary: The war years that followed hard on that Convention and the post-war period of depression has prevented any accomplishment of the sort. It was only possible to do the necessary work of repair and wait for a better time in which to carry forward the large undertaking. Even much interior repair work was delayed by the occupation of the Drawing Room by the Government for a year or more during the war. Indeed at one time we were threatened with the possibility of

[1]Continued from October Journal.

having a temporary building erected in the garden, but this danger was happily avoided.

However, much has been done during the last few years. The exterior and interior have been painted, exterior stone work repaired and the roof painted, the heating plant repaired, and a sprinkler system installed in the basement.

MR. DONN: Then there was the retaining wall along our lot line adjoining the Lemon Building that was built last year. That is the first step towards the rehabilitation of the garden.

MR. DAVIDSON: As for the Octagon House itself, it seems to me that if we can't afford to rehabilitate it, we should erect a proper office building on the 18th Street property, or elsewhere in Washington, and then turn the Octagon over to the people to be maintained by the nation as an historical monument.

I think such a plan would appeal to many members of the Institute as being more practicable than any attempt to rehabilitate the present Octagon building, which is really not suitable for use as a modern office building or for the working headquarters of such a body as the American Institute of Architects.

THE SECRETARY: Well, you may be right, for there are two opinions about most things, but for one I don't believe, in this case, that you are.

MR. DAVIDSON: Why not?

THE SECRETARY: Well in the first place, to take your last point first, it seems to me the Octagon House is admirably, indeed ideally, fitted to the uses of the Institute's headquarters. Tnere is certainly room enough. We only use two rooms regularly, and they are ample for the small but effective office force with which Mr. Kemper is able to do his work. Doubtless we may sometime, soon perhaps, need more space but we can then take over the other two rooms on the second floor that used to be the office of the JOURNAL. Now that the JOURNAL headquarters are in New York, we can use these rooms, and more than double the space for our clerical force.

The round room over the front entrance remains ample for the office of the Executive Secretary, and the drawing room downstairs is in every way adequate and dignified, if properly furnished, as a Directors' Room.

Even with this enlargement of our quarters we could still provide space for the American Federation of Art, and our other tenants.

MR. KOHN: I quite agree with the Secretary as to the adequacy of the space available and I believe that we can furnish the drawing room so that it can adapt itself to the demands of a Directors' meeting, and still at other times retain something of its original character as a Drawing Room.

This can be done by finding suitable old pieces of furniture for it rather than by equipping it completely anew. I am glad the Directors have approved this policy.

THE SECRETARY: As to your other suggestion, Mr. Davidson, I confess that I would much rather think of the Octagon peopled by our Institute forces, serving as a shelter and a home still, and so alive and functioning according to its natural purpose, than to think of it as a monument, set apart from living things, just to be gazed at. And what modern office building could possibly be built that would give so dignified, so gracious, and so fitting a home for an American Institute of Architects.

However, the resolution of this Minneapolis Convention contemplated the construction of a separate building on the rear of this property for our offices, or if this is followed your wish will be realized.

MR. LITTLE: If I remember rightly I saw something in the Minutes of the recent Executive Committee Meeting about the progress of the Building Committee's program for developing the property.

THE SECRETARY: Yes. Mr. Waid reported that conferences had been held in Chicago, New York and Boston and much interest shown in the development of a plan for the rehabilitation of the Octagon property. The Committee has prepared complete surveys and is laying plans for raising a large sum of money which shall serve as an endowment or maintenance fund for the whole property. A more complete report is expected at the November Board Meeting.

MR. KOHN: There is one point about our Conventions that hasn't been mentioned and which, in my opinion, should be given attention. That is the opportunity for personal contact among the delegates. Except for our final dinner, there was no chance for the delegates to meet and get to know each other.

MR. WAID: I quite agree. And the ladies of the Convention too were sadly neglected and left to their own devices.

THE SECRETARY: That is very true. I think it is due partly to our feeling of being at home, when we have a Convention in Washington. When Conventions are held in other cities, it is naturally a rare occasion that the local Chapter is glad to signalize by sight-seeing events and social activities which seem less called for in Washington. Of course, the Washington Chapter cannot be expected to carry the burden of such activities, year after year, but I believe the Convention Committee should be asked to make arrangements for some such activities each year.

MR. KOHN: Well, I think some other methods might be tried too. The formal business, of course, has to be carried out, but we might perhaps try the experiment of two or three round table sessions. One could be held the evening before the Convention assembles, at the Octagon, for instance. Ask everybody to be there and have two or three rooms devoted to groups of men discussing practical architectural problems, with a leader designated for each group.

THE SECRETARY: That would be using the Convention eve for a somewhat different purpose than the Treasurer and I were planning the other day to use it for.

MR. KOHN: What scheme were you two concocting?

THE SECRETARY: Merely a social evening without any set fireworks at all.

I think your round-table scheme is a good one, and could be extended perhaps, but of course in a way it has really been in operation for several years through the Pre-Convention Meetings. This year there was one on Education by the Institute Education Committee and the Association of Collegiate Schools of Architecture. Then there was one on Registration, and another on the Small House Service Bureau scheme. All delegates interested were invited to attend these conferences, and I believe quite a number did so.

The Treasurer and I felt that there was so much shop-

talk due for the three Convention days, it would be a good scheme to omit it entirely on the evening before, and just have an opportunity for delegates to meet each other and get better acquainted.

THE TREASURER: And perhaps have a little dancing too.

THE SECRETARY: I knew he had that in mind.

MR. KOHN: Possibly that might be a better scheme for that evening. If delegates arrive in time we might try some additional round-table conferences during the afternoon.

But in any event I think there ought to be special luncheon places designated on every day of the Convention. Much could be made of these luncheon meetings.

THE SECRETARY: I am sure you are right about that. And we ought to try to make it an accepted rule that delegates should not lunch with other delegates from their home town, unless for some special reason. Too often you can notice little groups of Boston, or New York, or Chicago men lunching together. These are the best opportunities to meet and get to know men in distant parts of the Country, and they ought not to be wasted by lunching with our fellow delegates from home.

MR. KOHN: Quite true. And perhaps these lunch groups might be formed around certain subjects on which the luncheon discussion could center.

THE SECRETARY: Yes, that is quite possible. For my part, however, I think three sessions a day of concentration on particular business is about all I can or at least want to stand. I think we will be fresher minded at the afternoon session if we relax somewhat at lunch and enjoy hap-hazard conversation with our table companions. We Boston men can get refreshed with a glimpse of California or Seattle or Minneapolis, and the western men can get a whiff of Boston East Wind or the equally individual breezes of Lake Michigan, and both be the better for it.

MR. KOHN: Of course there are many different ways of accomplishing the purpose on which apparently we are both agreed, and I wish we might get some suggestions from others to help us in developing it.

The truth is, however, that until we can get a meeting place of our own, right next to the Octagon, the Washington Conventions are going to be less popular than those away from Washington.

THE SECRETARY: This year, with the Convention to be held in Chicago, we can rely on them to help in the development of these schemes. And, of course, these various possibilities of round-table discussions, luncheons, and so on, are equally applicable to Conventions away from Washington.

Correspondence

"The Secretary's Table."

To the Editor of the JOURNAL:

SIR: Since we have been so courteously invited to join "Around the Secretary's Table," a contribution on the following points may not be amiss.

The wails of the slaves to tobacco smoke are truly pathetic. Still, just to keep the historic record straight it may be well to call attention to the fact that President Kendall distinctly stated from the chair, that there was a rest or lounging room near the entrance in which smoking was permitted, and some of the delegates did use it; so, it was not necessary to leave the building to enjoy a cigar.

As there were attendants at the convention who do not use tobacco, it might at least be comforting to nicotine worshipers to remember that their loss was a pleasurable gain to those who do not enjoy sitting in a tobacco smoke-clouded atmosphere. There is never loss without gain and surely a minority of the delegates were glad of the respite from tobacco fumes, for one out of many conventions.

Like all conventions a minority of the delegates occupy the floor and carry on the discussions, a majority saying little and some absolutely nothing publicly. President Kendall certainly presided in a charming manner and steered away from threatening discords tactfully, no doubt. But should not more voices be heard, and new ones encouraged to take part? Certain ones did attempt to get a word in edgeways at times but the monopolists clamored for recognition, no matter how many times they had before talked voluminously of perhaps every question discussed.

The modest, though possibly just as wise but never heard member, failed to be accorded a hearing and kept silent and perhaps lost heart and interest.

Would it not be a wise plan to establish a rule limiting speakers, and insuring recognition by the chair of the seldom or never heard man who does overcome his timidity and tries to take part?

Surely the chairman can see opportunity to draw out and encourage, even inviting these inexperienced and diffident ones, by curbing the ones who are so enthusiastic to hear themselves talk or think they are themselves the only wise ones who must be heard and decide the cases. By all means widen the range of discussion and condense the speeches, diversify the contributions to the consideration that every chapter may be heard, and somewhere near equally if possible.

EUGENE H. TAYLOR.

Secretary Hoover and the Small House Service Bureau

The following letter has been received by President Kendall:

DEPARTMENT OF COMMERCE
OFFICE OF THE SECRETARY
WASHINGTON

October 11, 1921.

MR. HENRY H. KENDALL, President,
American Institute of Architects,
The Octagon, Washington, D. C.

DEAR MR. KENDALL:

I have looked into the work of the Architects' Small House Service Bureau of the United States, with its divisions and branches, and have examined its organization and incorporation papers. The complete plans, specifications, documents and bills of materials, with the designs worked out for local conditions and to use stock materials and eliminate waste, materially simplify home-building

problems. The form of control by the American Institute of Architects should guarantee a high standard of service.

It gives me pleasure to endorse this work, and to assure you that the Department of Commerce will do all it can to cooperate with the Institute and the Bureau.

Yours faithfully,
(Signed) HERBERT HOOVER.

Important Notice—Jurisdictional Awards

To the Members of THE AMERICAN INSTITUTE OF ARCHITECTS:

The following decisions, identical in substance with the official document of the Board of Jurisdictional Awards, are hereby officially transmitted to the members of the American Institute of Architects, on whom they are binding.

Hollow Metal Doors and Trim

DECISION, rendered March 12, 1921.—In the matter of the controversy between the International Association of Bridge and Structural Iron Workers and the Amalgamated Sheet Metal Workers' International Alliance relative to Hollow Metal Doors and Trim, it is decided that the erection of hollow metal doors, made entirely of ten gauge metal or lighter, except for local reenforcement, and the installation of the door frames and trim in direct connection with such doors is the work of the Sheet Metal Workers; except that in the case of sliding doors, street entrance and vestibule doors, elevator, shipping room and freight doors, and doors used exclusively for fire purposes, the work is that of the Iron Workers. Kalamein or other wood-core doors are not covered by this decision.

Hollow Sheet Metal Window Frames and Sash

DECISION, rendered March 12, 1921.—In the matter of the controversy between the Amalgamated Sheet Metal Workers' International Alliance and International Associaiton of Bridge and Structural Iron Workers over Hollow Sheet Metal Window Frames and Sash, it is decided that the setting of hollow metal window frames and the hanging of hollow metal sash, when such frames and sash are made of No. 10 gauge metal or lighter, is the work of the Sheet Metal Workers. The Campbell Window and Sash not being of hollow metal, its erection is awarded to the Iron Workers.

School and Theatre Seats, Setting of

DECISION, rendered March 12, 1921.—In the matter of the controversy between the Amalgamated Sheet Metal Workers' International Alliance, United Brotherhood of Carpenters and Joiners and International Association of Bridge and Structural Iron Workers relative to the setting of school and theatre seats, it is decided that the work in question be awarded to the Carpenters.

Registration in Pennsylvania

The next regular examination for the registration of architects in Pennsylvania will be held December 28th to 31st, 1921, inclusive. Information relative to the examination may be had by applying to the Secretary, M. I. Kast, 222 Market St., Harrisburg, Pa. The formal application must be in the hands of the State Board of Examiners not less than ten days prior to the examination.

New Members Elected

BOSTON: Horatio W. Beal. COLORADO: William W. Stickney, *Pueblo.* FLORIDA: H. George Fink, *Miami;* Agnes Ballard, *West Palm Beach.* COLUMBUS: Herbert S. Jones, *Mansfield.* ILLINOIS: John I. Rinaker, *Springfield.* KANSAS CITY: William Percy Lodge. MINNESOTA: Edward S. Stebbins, *Minneapolis.* NEBRASKA: Frank J. Ellert, Matthew J. Lahr, *Omaha.* NEW JERSEY: George F. Bial, *Wood Ridge.* PHILADELPHIA: Thomas E. Ash, Irwin Thornton Catharine, Henry S. Harvey, Herrmann B. Tobias, William A. Young. SAN FRANCISCO: William Greenfield Corlett, Walter D. Reed, *Oakland;* Norton Ellsworth Wood, *San Francisco;* Wm. J. Wilkinson, *Piedmont.* SOUTHERN CALIFORNIA: Philip Hubert Frohman, *Boston, Massachusetts;* T. Beverley Keim, Jr., *Los Angeles.* SOUTHERN PENNSYLVANIA: Julian Millard, *Altoona.* TEXAS: Robert Titus Gidley, Ernest Palmer Giles, *San Antonio.* WASHINGTON, D.C.: L. Justement. WASHINGTON STATE: B. Marcus Priteca, Howard H. Riley, *Seattle.*

News Notes

THE Cleveland Chapter of the American Institute of Architects, believing that instruction in the theory and practice of architecture should be available in Cleveland, is now co-operating with The Cleveland School of Art in establishing an Architectural Department as the first step toward the foundation of a School of Architecture of the highest possible efficiency.

A FULL meeting of the Board of Directors will be held at Indianapolis on November 11-12, an account of which will appear in our next issue.

Coincident with the meeting, the Executive Committee has invited the prominent producers of building materials to meet with it at Indianapolis on 10 November, the day preceding the Board meeting, for a discussion of "Better Advertising Literature for Architects". It is hoped that steps may in some way be taken toward eliminating the waste in this field.

THE following resolution was presented by the President of the Illinois Chapter at its October meeting, with the recommendation of the Executive Committee that it be passed, which was done:

"Whereas, the Landis agreements have been signed by most building trades with the stated purpose of preventing annoyance and avoidable expense and the advancement of labor and management in skill and productivity in the building trades; And since the faithful carrying out of these agreements will tend to bring about such desirable results;

Therefore, we the American Institute of Architects, Illinois Chapter, at a regular meeting by final vote, ask all our members and all other architects to write a clause into all their contract specifications for work in Cook County, Ill., to the following effect, to wit: All work contemplated herein shall be carried out according to the agreements, principles and terms of the wage award of Hon. K. M. Landis of Sept. 7, 1921."

Structural Service Department

SULLIVAN W. JONES, *Associate Editor*
LEROY E. KERN, *Assistant*

In connection with the work of the Committee on Structural Service of the American Institute of Architects and in collaboration with other professional societies and organized bodies having the same objective—improvement in building materials and methods and better shelter for humanity in all its manifold vocations and avocations.

Committee Activities

Conduit in Cinders. (31b1)—A special sub-committee of the N. F. P. A. Electrical Committee was designated last Spring to investigate the corrosion of electrical conduit in cinder fill, to report its findings and make such recommendations for code provisions as might seem desirable.

The sub-committee was composed of one representative each of the N. A. E. C. & D., Associated Manufacturers of Electrical Supplies and the American Institute of Architects. The committee prepared a questionaire designed to secure a national record of experience with conduit imbedded in cinder fill or cinder concrete floor fill and in cinder concrete. The questionaire was sent to 111 electrical contractors, consulting electrical engineers and architects selected with respect to the class of work handled and geographical distribution. The questionaire brought a 40% response and a fund of valuable opinion based upon experience and research.

The sub-committee made its report to the Standing Committee late in August. Portions of this report are quoted below as being of direct interest to architects. It should be borne in mind, however, that the report has not been acted upon by the Electrical Committee and the recommendations made are matters for further discussion and future action. They may or may not find their way into the national electrical code. Nevertheless the report furnishes food for thought and investigation by the individual architect.

"The replies to this questionaire indicate the national experience with pipe conduit imbedded in cinder concrete floor fill (cinder concrete floor fill being usually a very lean mixture of portland cement and cinders or clinker, the residue from the combusion of either anthracite or bituminous coal) to be that where moisture is present, the conduit corrodes very rapidly. Moreover, it appears that the rate of corrosion is little affected by the character of the protective coating on the conduit.

Enamelled, galvanized and sheradized conduits have all failed in periods ranging from ¾ of a year to 7 years, depending upon the amount of moisture present. The explanation of this condition is that all cinders contain sulphur in varying amounts, which, by the admixture of moisture is converted into sulphurous acid. This acid attacks not only conduit, but also water, gas, steam and other ferrous pipe with which it comes in contact.

Chemically speaking, the enamelled coating should protect the conduit from attack by acid. But this coating is easily abrased and destroyed by traffic abuse after the conduit is installed and before the concrete is placed. Any one familiar with construction, knows how difficult it is to control such destructive traffic in unfinished buildings. Conduit for branch circuit work usually is cut and threaded on the job and the scores in the coating made by the teeth of the vise on the cutting bench, and threads exposed at couplings are points at which the acid reaches the steel and corrosion begins, spreading under the protective coating, no matter what its character.

It appears that when the proportion of portland cement in the cinder concrete is relatively large, or say one part of cement to 5 or 7 parts of cinders, corrosion of the conduit, even when moisture is present, is not a serious matter. The explanation of this phenomomen is that the cement, in hydrating, gives off free lime which has a neutralizing effect upon the acid.

If it were possible to prohibit the placing of pipe conduit in cinder concrete, except where the concrete contained a certain minimum proportion of cement, and if it were possible to enforce the rule, the placing of conduit in such cinder concrete might safely be permitted. But such control cannot be made effective through the electrical code and electrical inspection, and indeed it is doubtful whether such control would be effective even if adequate provision were made in building codes generally.

The plain fact is that cinder concrete should not be used in buildings where it comes in contact, not alone with conduit, but also with ferrous pipes of any kind. The Electrical Committee, through the various and suitable national bodies affiliated in the N. F. P. A. should undertake an educational campaign among architects and engineers to convince them of the desirability of avoiding the use of cinders and cinder concrete when they may come in contact with ferrous pipe.

There are various protective measures, which, if adopted and thoroughly executed, would prevent the corrosion of conduit. The conduit might be given a heavy coating of asphalt paint after installation and before the cinder concrete is placed. Small defects in this coating, however, would render it valueless, and there is no assurance that such a coating would be so applied as to be free from defects.

Adequate protection to the conduit might be secured through placing about it an envelope, not less than 1" thick, of portland cement and sand mortar. The cost of such protection, however, would probably be prohibitive; and if it became general practice, it would doubtless raise a question of trade jurisdiction.

The special Committee realizes the futility of making any definite recommendations that cannot be made effective through the electrical code, since that code is the only thing with which we are concerned and through which we have any jurisdiction.

Experience leaves no room for argument to controvert the assertion that conduit and cinders should not be allowed to come in contact. We cannot prohibit the use of cinders under the electrical code, but we can prohibit the placing of conduit in cinders or cinder concrete, and that is the Committee's recommendation.

The inclusion of such a prohibitory clause in the code might at first seem to impose an unreasonable hardship upon those who design and construct buildings. But the Committee is fully persuaded that such is not the case. With a little thought and the application of a little knowledge and ingenuity, it will be found wholly feasible and highly desirable to adopt a new practice in the matter of locating horizontal branch circuit work. It should be borne in mind that there are very large areas in the country where cinders are not available for structural purposes, and architects and engineers in such regions have solved the problem satisfactorily. In still other places where cinders are commonly used, certain architects and engineers, profiting by past experience, consistently prohibited their use. So the Committee does not feel that it is recommending a step that is radical or that will result in hardship."

Abstracts

Automatic Control of Humidity in Shops. (30f1). (*Technical Notes No. 121. Forest Products Laboratory, Madison, Wis.*) Devices for controlling humidity in shops are of three types. The first are makeshifts, such as wet sawdust

strewn on the floor, troughs of running water at the sides of the room, or simply an ordinary sprinkling can. Such crude devices are not in any sense self-regulating, and the results are haphazard. The sprinkling-can type of humidifier has been in use for hundreds of years and is of interest chiefly because it shows that the need for air-conditioning apparatus in many industrial plants has been recognized for a long time. A second class of humidifiers includes those that are capable of increasing the moisture in the air up to the point for which they are set, but cannot decrease it. When the weather forces the humidity above the desired point, such instruments remain inactive. Few instruments of this type attempt any control of the temperature. A third type of conditioning apparatus is that which is able to hold the atmosphere in a room at a constant temperature and humidity irrespective of outside conditions.

One of the few instruments which absolutely control both the temperature and the humidity of the air is that developed at the Forest Products Laboratory, Madison, Wisconsin. For several years this apparatus has maintained in the laboratory wood-parts storage rooms the typical climatic conditions found in various parts of the United States, ranging from the hot, moist climate of the South to the cold, dry climate found in the mountain regions. The same type of instrument also keeps the wood-working rooms at the laboratory at uniform temperature and humidity year in and year out, with the result that the wooden articles manufactured there give the minimum amount of trouble afterwards from warping and checking, and the shop conditions are healthful and comfortable to the highest degree. These instruments have required very little personal attention since they were installed.

The principle upon which the laboratory automatic humidity-control apparatus works is that of cooling the air to the dewpoint temperature for the desired atmospheric condition, saturating it with moisture at that point, and then heating it without addition of moisture to the required room temperature. For any given room temperature it is possible to get any humidity desired, simply by choosing the temperature at which the air is saturated.

The apparatus consists of a small cabinet, or chamber, through which the air is drawn as often as it needs to be conditioned. The conditioning chamber contains water sprays whose temperature is kept constant by a mixing valve. These sprays suck in the air by their own action, cool it to the temperature at which it should be saturated, and give it all the moisture it can hold. As the air leaves the chamber it is heated to room temperature by coils, whose steam supply is controlled by a thermostat located in the outlet. Thus when the air is drawn into the chamber, it may be too hot or too cold, too moist or too dry, but the apparatus automatically humidifies or dehumidifies it and brings it to the correct temperature before allowing it to pass again into the room. Both in the storage rooms, where the air needs conditioning very infrequently, and in the workrooms, where it is completely changed every ten minutes, the recording instruments show that the atmospheric conditions have varied to only a slight extent throughout a three-year period.

This method of air conditioning was devleoped primarily for woodworking shops and wood gluing, finishing, and drying rooms. It is adaptable, however, to numerous other industrial plants, including textile mills and chemical, foodstuff, and tobacco factories, in which close control of atmospheric conditions would be beneficial to both the material being manufactured and the health of the employes. It is practicable wherever there is a supply of cold water and steam hear.

Drawings of the apparatus and further details concerning its installation and operation may be had on application to the Forest Products Laboratory.

Marble. (22a). (*U. S. Geological Survey. Bulletin 632. "Marble Resources of Southeastern Alaska," by Ernest F. Burchard, 118 pages 6x9 inches. Fully illustrated including reproductions in color of many of the marbles and maps showing their distribution.*) This bulletin contains a list of buildings in various parts of the United States in which Alaska marble has been used for interior decoration, also an extended classification of the marbles showing where may be found stone having almost any color or texture.

Since 1904 there has been a steady increase in the marble output of Alaska. The output, however, has practically all come from the Shakan-Calder region of the Ketchikan district. The bulletin presents a complete statement of the present knowledge of the distribution and extent of the deposits in Alaska. It contains in addition a discussion of the physical and chemical properties of marbles and from this discussion the following abstract has been prepared.

True marble is a metamorphic rock as distinguished from sedimentary rocks such as limestone. Metamorphic rocks are sedimentary or igneous rocks that have, in the course of time, become greatly changed in composition and texture. The chief agents that bring about these changes are pressure, heat, and chemical action, generally at considerable depths below the surface of the earth. By metamorphic agencies limestone is transformed into marble. During the transformation the original bedding of the limestone may become nearly or completely obscured and the crystalline texture and folded structure characteristic of marble induced.

Definition of Marble. Marble is a term applied commercially to a granular crystalline limestone or dolomite, and even to other rocks, such as serpentine, that are susceptible of polish and possess attractive colors. Scientifically, marble is a rock composed mainly of granular crystalline calcite or dolomite or of both.

Metamorphism. In the formation of marble from limestone, crystallization has resulted from the effects of heat and pressure, usually aided by the action of water. The calcite or dolomite crystals in a thin section of marble are generally irregular in size, shape and arrangement, and many of them are twinned. Crystallization has probably occurred below the surface of the earth long before the rocks were brought into their present position by crustal elevation and erosion. True marbles are therefore found in regions that have been subjected to metamorphic action, and they are associated with other metamorphosed rocks, and also in zones along the contact of a limestone with an igneous rock. If the original limestone contains silica and other impurities, certain silicate minerals may be developed in the marble.

Chemical Composition. High-calcium limestone and calcite marble contain from 90 to more than 99 per cent calcium carbonate. Pure dolomite, either non-metamorphosed or metamorphosed, consists of approximately 54 per cent calcium carbonate and 46 per cent magnesium carbonate, but in most dolomites the percentages are slightly lower on account of the presence in the rock of foreign minerals or impurities. Marbles that are mixtures of calcite and dolomite may be of intermediate compositions.

Among the common impurities in limestone and marble are varying percentages of silica, alumina, iron oxides and carbonates, iron pyrites and narcasite (iron disulphide), manganese oxides, gypsum, alkalies, and carbonaceous material, including graphite. The impurities in marble are present chiefly as grains of definite minerals, ranging in size from those that are microscopic to those that may be readily seen by the unaided eye. Among the common mineral impurities are quartz, hematite, limonite, pyrite, marcasite,

graphite, chlorite, hornblende, pyroxene, tourmaline, feldsper, biotite, muscovite, sericite, talc, epidote, tremolite, titanite, wollastenite, and diopside.

Physical Properties. Valuable qualities possessed by most marbles are sufficient hardness, cohesiveness, and strength for the purposes to which they are most adaptable, slight translucence, moderate specific gravity, pleasing textures and colors, and susceptibility to polish. Other properties that must be considered in connection with the use of marble for certain purposes are its rift or grain, solubility, porosity, permeability, elasticity, expansiveness under heat, flexibility, deformation under pressure, thermal conductivity, and sonorousness, but some of these properties are chiefly of scientific interest.

Weathering. On the outcrop and just beneath a cover of residual clay, debris, and soil, limestones and marbles are generally disintegrated, or weathered, and stained to depths depending on the physical and chemical character of the stone and on climatic and atmospheric conditions. Impurities occur in greater proportion in the weathered rock than in the unweathered, because they are less soluble than calcium carbonate.

Types of Alaska Marble Available. Many types of marbles are available in southeastern Alaska. Probably the most common and the one which thus far has been exploited commercially on the largest scale is a fine to medium grained crystalline white to bluish-gray marble with gray to dark-bluish veins, bands, and clouded areas. Other crystalline and schistose marbles that give promise of being developed successfully show handsome contrasting "verde antique" effects and other striking combinations of color, such as green and pink, black and white, and white and yellow. The green color appears to be due to chloritic material and possibly to epidote, the bluish and black veins possibly to graphite, and the pink and yellow shades to iron oxide. Certain marble deposits give promise of affording statuary material. Some dense non-crystalline limestones have attractive colors of pink and chocolate mottled, gray, blue, and black, and are susceptible of receiving a high polish.

Strength of Built-up Southern Yellow Pine Timbers. (19a). (*Tests made at the U. S. Forest Products Laboratory in cooperation with the National Lumber Manufacturers Association. By G. E. Heck, Engineer in Forest Products*).

These tests indicate that from the standpoint of strength there is no marked difference between built-up beams of "dense" material practically free from defects and solid beams of "dense" material with defects limited as in the select structural grade of the Southern Pine Association.

Character of Material Tested. Commercial southern yellow pine planks 2 inch by 12 inch by 16 foot were used. This material had been air-dried and had about 17 per cent moisture content at the time it was tested. The planks were plain sawed and practically free from defects, but about one-half the number contained season checks, some of which opened up considerably after assembly in the beams and before testing. A few of the planks were somewhat cross-grained, but not seriously enough to preclude their use for this series of tests. The solid beams, previously tested, and with which comparison was made, were of the grade known as "select structural."

Construction of Beams. Each built-up beam consisted of five planks bolted together. The planks composing a beam were matched by comparing ends, material of practically the same quality being used in each beam. All bolts and holes were ⅞ inch in diameter. Bolts were placed in two rows 2 inches from top and bottom and starting 6 inches from ends. Three intermediate bolts spaced 45 inches on centers were used in the top row, and four bolts, staggered with the top row bolts were used in the bottom row. Washers 1¾ inches in diameter were used under the heads and nuts. After the beams were constructed they were surfaced on the top and bottom.

Where Built-up Beams Fail. It has often been thought that when two or more timbers are used together and loaded so as to deflect equally, the stiffer pieces will take the greater load and will, therefore, fail before the less stiff pieces. It is true that the stiffer pieces will take the greater load. Previous tests, however, have demonstrated that dense, stiff pieces usually deflect farther to the elastic limit and to failure than pieces of lower density and stiffness. Beams, therefore, built-up of clear planks will tend to fail in the less stiff rather than in the stiffer planks.

The Forest Products Laboratory has made no tests with defective built-up beams to ascertain if the defects in the component planks can be staggered in the beam and the latter so fastened together that results will be comparable to results on solid beams containing the same number and size defects similarly located. Neither have any tests been made to determine if laminations will act independently as individual beams, each breaking at its particular defect, the net results being practically equivalent to having all the defects at the same point in a solid beam.

"Virgin Growth" and "Second Growth" Timber. (19a). (*Technical Note No. 153. Forest Products Laboratory*). Specifications often call for "virgin growth" or "second growth" timber, yet the terms are without fixed significance, and the material when delivered can not be positively identified as belonging to one class or the other.

"Virgin growth," also called "first growth" or "old growth," means timber which grew up in a standing forest under conditions of active competition for sunlight and moisture.

"Second growth," when applied to a forest stand, usually means timber whose main growing period occurred under conditions of lessened competition, after all or a portion of the original stand had been removed by cutting, fire, wind, or other means. In connection with individual trees, the term is used to mean any whose growing conditions approximated those which would produce a "second growth" stand. To the wood user, "second growth" means material cut from either of these sources. In general, the term is associated with the idea of a second crop of timber, though specific applications may vary.

Virgin growth is generally thought of as slow growing timber, while second growth, due to more favorable conditions, is relatively rapid. A faster rate of growth is evidenced by wider annual rings. These are popularly supposed to indicate stronger and tougher wood in the hardwoods, such as ash, hickory, elm, and oak; and weaker and brashy wood in the conifers, such as pine and fir. Hence, for uses in which strength and toughness are essential, second growth is sought among the hardwoods, whereas in conifers virgin growth is desired.

As a second growth forest attains maturity, the rate of growth slows up, and the annual rings may be no wider than in virgin growth timber of the same size. On the other hand, when a slow-growing suppressed forest tree is freed by removing the neighboring trees, it may grow rapidly for a long period. Therefore it is possible to have some wood with the characteristics of virgin growth and some with those of second growth in the same tree. Furthermore, individual trees in a virgin growth forest may have the characteristics of second growth throughout and vice versa.

Instead of broadly specifying "second growth" or "virgin growth" or depending upon requirement on the width of annual rings to secure good material, the Forest Products Laboratory considers it advisable to disregard rate of growth and rely upon density as a guide to quality.

Sand-Lime Brick. (3g3). (*Circular of the Bureau of Standards No. 109 "Sand-Lime Brick-Description and Specification." Nine pages 7x10 inches.*)

Definition. Sand-lime brick is a brick composed of grains of sand bound together by a hydrated calcium silicate.

Manufacturing Process. Sand-lime brick is made by mixing sand with slaked lime, pressing the mixture into brick form, and curing it in steam. The steam brings about a chemical reaction between the lime and the sand, forming the "hydrated calcium silicate" which is the bonding material of the brick.

Any good clean siliceous sand may be used, provided only that it contains enough fine material to combine with the lime, say, about 15 per cent through a No. 100 sieve. The lime must be nearly pure and must be thoroughly slaked. The proportions of materials used are 90 per cent sand to 10 per cent slaked lime. Enough water is added to make the mixture damp enough to hold its shape when pressed. The mixture is then run through a press, where it is molded into brick form, using a pressure of 5,000 to 10,000 pounds per square inch. The green bricks are piled on small cars, holding about 1,000 bricks each. When a car is loaded it is run into the hardening cylinder. This is a long horizontal cylinder made of boiler plate. It is large enough to hold a day's run from one press, say, 10 cars of 1,000 bricks each. At night, when the cylinder is full, the front end is bolted in place, and live steam is turned in. The steam pressure in the cylinder is brought up to about 120 pounds and is held there all night. In the morning the cylinder is opened and the brick removed. They are ready for market immediately.

While the above is a description of a typical process of manufacture, it must be understood that each plant has introduced special modifications to meet its particular conditions.

Properties of the Brick. Most sand-lime bricks on the market today will qualify as "medium," some few as "hard." This classification defines the strength of the brick and its ability to absorb water. (See May, 1920, JOURNAL.)

Sand-lime brick are regular in shape, the edges are straight, the sides parallel and nearly smooth, the angles are true and the individual bricks are uniform in size. Most sand-lime bricks are nearly white. Occasionally the use of a crushed colored sandstone instead of sand results in the production of a colored brick. Attempts to make colored brick by the addition of pigments have been fairly successful. Buff, red, and gray sand-lime bricks have been on the market, but the tendency of the times is opposed to such specialties. The addition of portland cement, or some other ingredient, to give certain properties to the brick has been tried commercially, but the use of such materials has been pretty generally abandoned, usually for economic reasons. The satisfactory use of sand-lime brick, especially in northern latitudes, over a period of years, is a definite indication of its ability to withstand the action of the weather. Sand-lime brick is not in any sense a refractory material and while sometimes used for building chimneys for small houses, it should not be used in places where it may be subjected to a red heat.

Specifications. To get sand-lime brick suitable for general purposes, specify "sand-lime brick, medium grade, according to A. S. T. M. specification C 21-20.

Difference Between Moulds and Wood Destroyers (19a31). (*Technical Note No. 133. Forest Products Labatory.*) Not all fungi which live upon wood impair its strength, but conditions which promote the growth of molds, blue-stain fungus, and other non-injurious fungi are usually favorable to the growth of the wood destroyers, and these may be active on the same wood bearing the molds. Hence, the presence of mold on timbers intended for any structural purpose should cause them to be looked on with suspicion.

In the early stages of their growth the molds and the wood-destroying fungi sometimes have a very similar appearance, and there is no simple means known to the U. S. Forest Product Laboratory by which lumbermen and wood users can separate them at sight. The surface growth of molds is generally cottony or felty in appearance, the mycelium of fine mold threads are interwoven, never compacted into membranous sheets or strands. The mycelium of wood destroyers may be fluffy and glistening, but more usually are compacted into strands or fan-shaped patches.

The characteristic feature of mold growth on wood is the fact that the minute threads which enter the wood do not bore into the wood fibers or dissolve them away. They pass through the spaces between the fibers or enter them through the natural openings, called pits, which are found in the walls of certain cells. Starches, sugars, and other contents of wood cells constitute the food of the molds.

The wood destroying fungi are able to send their threads right through the wood fibers, breaking down the cell walls and utilizing portions of this decomposed material as food. This action very markedly weakens the wood, making it crumbly, stringy or spongy,—in other words, producing rot or decay. The presence of wood-destroying fungi in an advanced stage of growth is evidenced by fruiting bodies, commonly called mushrooms, toadstools, conchs, or brackets.

The principal economic loss caused by molds is through the staining or discoloration of the wood. No greater injury may be caused by the wood destroyers in their early stages; but their work will continue and finally result in the destruction of the wood if favorable moisture and temperature conditions prevail.

Lumber Value of Trees not Affected by Turpentining. (19a). (*Technical Note No. 158. Forest Products Laboratory*). The crude turpentine is not drained from a store in the tree, but is manufactured under the stimulus of the wound by living cells in the sapwood immediately adjacent to the cut on the trunk. No turpentine is produced by the heartwood because all of its cells are dead. The heartwood may be saturated in places with pitch but this does not readily flow out as does the resin freshly formed in the sapwood. The major part of the tree is not appreciably affected, and the loss due to death of trees or to a reduction or degrading of lumber is very small when the proper method of turpentining is followed.

Artificial Stone. (8c). (*Reprint by the U. S. Geological Survey. "Concrete Stone and Concrete Blocks in 1919," by G. F. Loughlin and M. E. McCaslin. Six pages, 6x9 inches*). This report gives an account of the conditions in the industry and tables of quantity production of architectural stone, concrete blocks, concrete brick and silo blocks and staves. The physical characteristics of these products are not discussed in any detail.

Community Tile Drainage Construction. (36d). (*Yearbook of the Department of Agriculture Separate No. 822. By John R. Haswell, Senior Drainage Engineer.*) This 6x9 inch eight page reprint describes the advantages and need for cooperative tile drainage construction; results that have been accomplished; costs and value of tile drainage.

Sand and Gravel. (3). (*U. S. Geological Survey, "Sand and Gravel in 1919," by R. W. Stone. Pages 13, size 6x9 inches.*) This booklet is devoted entirely to data on the production and value of glass sand, building sand, moulding sand, grinding and polishing sand, fire or furnace sand and engine sand. Neither the qualities nor uses of sand are discussed.

TABLE I

Colorless Waterproofing Materials. (*7b21*) (*by D. W. Kessler, Associate Engineer Physicist, Bureau of Standards*).[1] Numerous inquiries from engineers and architects for information concerning the merits of various colorless waterproofing materials have led to a study of the relative value of several such compounds. The utility of these materials is as follows: (1) To prevent water from penetrating the walls and causing dampness on the interior (2) to prevent the decay of exposed masonry by frost action. Many materials used in masonry construction are porous enough to allow a small amount of water to go through and cause dampness on the interior of the walls. In most cases of this kind a waterproofing is desired that will overcome the difficulty without altering the appearance of the masonry.

To prevent frost action it is necessary to prevent the absorption of water. Since the decay from frost action is a rather slow process, the problem is, in most cases, to decide whether it is economical to keep the exposed walls coated with a waterproofing material. In order to do this one must know for what period the coating is effective or how often a new coat will have to be applied. The solution of this problem has been undertaken by a long and tedious process, viz., actual absorption tests on treated specimens exposed to the weather for a period long enough to show the life of the treatments.

Description of the Materials and Methods of Application.—The materials are described under reference letters and the trade names are listed separately. The relation between the reference letters and the trade names is withheld from publication.[2] All the waterproofing materials except two were furnished by the producers. These two were treatment T which is non-proprietary and treatment R which consisted of paraffin.

Material A.—A thin liquid of clear yellow color consisting mainly of china wood oil dissolved in a petroleum distillate. The non-volatile is approximately 27%. Two or three applications were specified for porous and one for dense stones like marble. Where more than one is applied an interval of 24 hours is allowed between applications. The limestone specimens treated for the tests described were given three liberal coats 24 hours apart.

Material B.—A very thin liquid of clear yellow color containing approximately 67% of volatile matter. The non-volatile consists of equal part of paraffin and a fatty oil. Two coats were specified for rough surfaces and one for cut stone. The specimens were given two coats at an interval of 24 hours.

Material C.—A thin liquid slightly brown in color, containing about 96% of volatile matter. The non-volatile consists of an aluminum soap and the solvent is mineral spirits. One application was recommended in which the surface should be brushed over until thoroughly saturated. The test specimens were treated in accordance with this recommendation.

Material D.—A thin liquid, light yellow in color, having a china wood oil odor. The volatile is about 90% which is mineral spirits. The non-volatile is a fatty oil. The recommendations for application were two coats applied with a bristle brush 24 hours apart. The specimens were given three coats since they did not appear to be saturated by the second.

Material E.—A 15% aqueous solution of magnesium fluosilicate. This material was applied to the specimens in three coats of the following dilutions:

1st. 1 part solution to two parts water.
2nd. 1 part solution to one part water.
3rd. 2 parts solution to one part water.

Material F.—A thin liquid of milky color and ammonia odor. The volatile amounts to about 97% which is water, and the solid matter is sodium-ammonium soap. The recommendations for application were two coats for ordinary materials and three for unusually porous materials, applied with a brush or spray. The specimens were given three coats with a brush.

Material G.—A thin liquid having a nitro-benzol odor. The volatile amounts to about 88%, which is a petroleum distillate. The non-volatile appears to be a heavy petroleum distillate. The recommendations for application require two or more coats at intervals of 24 hours. The specimens were given three coats.

Material H.—A milky liquid consisting mainly of a 6% aqueous solution of casein glue. The producers recommend not less than two coats, the second to be applied immediately after the first is absorbed. Two coats were applied to the specimens under tests.

Material I.—A thin liquid of light amber color. The volatile amounts to about 62% which is petroleum distillate. The non-volatile is a mixture of fatty oil and paraffin. The manufacturers recommend that the material be applied until the stone is saturated, which will usually not require more than two coats. The specimens were given three coats.

Material J.—A clear yellowish liquid about the consistency of syrup and having the odor of fusel oil. The volatile amounts to about 92% which is ethyl acetate, acetone, etc. The non-

[1] The complete report may be secured upon request from the U. S. Bureau of Standards, Washington, D. C.

[2] Some of these preparations are proprietary and some are not, and in some cases further information can be furnished by the Structural Service Committee.

volatile is mainly cellulose nitrate. The producers recommend that this material be thinned for use on Indiana limestone with 5% of amyl acetate. The specimens treated were given one liberal coat in accordance with this recommendation.

Material K.—A thin liquid of yellowish brown color and coal tar naphtha odor. The volatile amounts to about 62% which is solvent naphtha and the solid matter is coal tar resin. The producers recommend this for alkaline conditions such as are found along the sea shore. The specimens were given two coats at an interval of 24 hours.

Material M.—A clear liquid with an odor of mineral spirits. The volatile amounts to about 86% which is a petroleum distillate. The solid matter is paraffin. The producers recommend one coat applied with a brush or by dipping. The specimens were given one liberal coat with a brush.

Material O.—A thin liquid of amber color and varnish odor. The volatile amounts to about 60% which is mainly mineral spirits. The solids are oils and resins. The producers recommend two coats. The specimens were given two coats at an interval of 24 hours.

Material P.—A thin liquid of amber color and varnish odor. The volatile amounts to about 62% which is mainly mineral spirits. The non-volatile consists of oils and resins. The producers recommend two coats. The specimens were given two at an interval of 24 hours.

Material Q.—A thin liquid of amber color and varnish odor. The volatile amounts to about 68% which is mainly mineral spirits. The non-volatile consists of oils and resins. This material and the two preceeding are thin varnishes. The specimens were treated with two coats.

Material R.—This treatment consists of a liberal application of molten paraffin which is afterwards heated with a flame to drive the wax into the pores of the stone. The specimens were first heated in the drying oven to 110° C. and heated again with the flame of the Bunsen burner after the application.

Material S.—A thin cloudy liquid having an odor of mineral spirits. The volatile amounts to about 93%, which is mainly mineral spirits. The solid matter is paraffin. The producers specify two applications with a brush for stones of ordinary porosity or three for very porous ones. Two coats were given.

Material T.—This is a non-proprietary treatment known as Sylvester's process. It consists of ¾ lb. of soft soap dissolved in 1 gal. of water, and ½ lb. of alum dissolved in 4 gal. of water. The soap solution is applied and shortly afterwards the alum solution is applied. The action that takes place results in the deposition of an insoluble soap in the pores of the stone. The specimens treated by this process were given three applications.

Trade Names and Producers of Materials

Lithol. The Arabol Mfg. Co.
Minwax. The Minwax Co.
Transparent Driwal. The Billings-Chapin Co.
G. F. No. 100. The General Fireproofing Co.
G. F. No. 145. The General Fireproofing Co.
Ceresitol. The Ceresit Waterproofing Co.
Aquabar No. 2. The Aquabar Co.
Kemisol. The Morene Products Co.
Dehydratine No. 2. A. C. Horn Co.
Dehydratine No. 22. A. C. Horn Co.
Dehydratine No. 222. A. C. Horn Co.
Colorless Waterproofing. Northwestern Waterproofing Co.
Gliddens Colorless Waterproofing. The Glidden Varnish Co.
Anhydrosol. Toch Bros.
Toxloxpore. Toch Bros.
Reduced 1017. Toch Bros.
Caffall's Process. The Obelisk Waterproofing Co.
Porseal. The Truscon Laboratories.
Sylvesters Process. Non-proprietary.

Description of Stone Specimens.—Two types of stone were used viz., Indiana limestone and a light colored sandstone from New Mexico. Specimens were prepared from four samples of the limestone representing the products of different localities. The different stones are described n the following table:

Mark	Type of stone	Color	Texture	% water absorption in 30 min.	% water absorption in 7 days.
No. 1	Ind. Limestone	Buff	Fine Gr.	4.49	5.52
No. 2	" "	"	" "	3.16	5.18
No. 3	" "	"	Medium	5.44	5.87
No. 4	" "	"	Coarse	5.59	6.43
No. 5	N. M. Sandstone	Gray	Fine gr.	1.94	3.24

Description of Tests.—The finished stone specimens were dried in the electric oven at 110° C. before the treatments were applied. All proprietary treatments were applied in accordance with the recommendations of the producers. Special care was taken to obtain a thorough penetration and it is believed that better results were obtained on the specimens than could be obtained on a structure. The uniformity of the results obtained from the different specimens treated with the same material indicate that the treatments were properly applied.

After the treatments appeared to be dry the specimens were weighed and put on a roof where they were freely exposed to the rain and sunshine. Each month they were weighed, immersed in water for 30 minutes and weighed again after drying the surface with a towel. A rain shortly before the time of weighing caused a considerable increase in the weights, but a few dry days preceeding the weighings would bring the weights, in most cases, back near the original. A few of the materials allowed a considerable absorption of water which was retained in the specimens. Such materials would probably be harmful where exposed to frost action. Results for the following materials have not been included in this report due to the fact that they have not been under test long enough to justify it: H, J, L, O, and S.

Fig. 1 shows the appearance of the materials on slabs of Indiana limestone. The half of each slab to the right is treated, and the left half shows the original stone. All of these treatments alter the original appearance of the stone. Many mar the appearance so much as to be objectionable on the exposed walls of buildings. Those that alter the appearance of Indiana limestone least are G, T, L, and C. Those that mar the appearance of the stone are O, K, I, Q, P, and R. The appearance of the others would probably be considered objectionable in some cases and not in others. While they change the appearance of the stone considerably, the effect is probably not as great as that due to a year's exposure to the soot and smoke of manufacturing districts.

In the following list the materials have been placed in accordance with their value in reducing the water absoprtion. The numbers opposite the materials were obtained by dividing the maximum percentage of absorption of the treated specimens during the tests by the percentage absorbed by untreated specimens of the same stone during seven days immersion.

Results

On Indiana Limestone.				On New Mexico Sandstone.	
Material I	.01	Material T	.43	Material C	.47
" B	.03	" F	.69	" R	.60
" C	.05	" D	.72	" T	.66
" M	.13	" Q	.75		
" A	.21	" P	.76		
" G	.33	" E	.99		

The results given in the list above are for the worst conditions that occurred during the tests. A significant feature of some of the curves plotted in connection with the tests is that they show in many cases a large absorption from rains, and a gradual deterioration of the waterproofing material with the period of exposure. The intention is to continue these tests long enough to determine the period of effectiveness of all the materials.